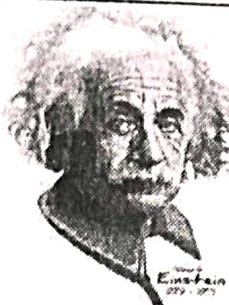


ग्रा. मोटेगावकर सराचे

# RCC



"Education is not the learning of facts, but the training of the mind to think."

-Albert Einstein

Mark  
720

Group  
PCB

## Repeater NEET (2025-26) PCB Test

Date : 13/07/2025

Time : 3.00 Hrs

Physics - 45

Chemistry - 45

Biology - 90

Question Booklet Version

11

(Write this number on  
your Answer Sheet)

Roll Number

Question Booklet Sr. No.

• Today's Test Syllabus •

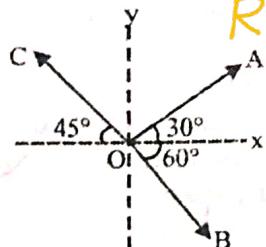
Physics : Heat Transfer + Scalars & Vectors + TPM

Chemistry : GOC-I and Atomic Structure

Biology : Sexual Reproduction in F. Plant +Plant Kingdom + Circulation

### SECTION 'A' PHYSICS

01. The magnitude of vectors  $\vec{OA}$ ,  $\vec{OB}$  and  $\vec{OC}$  in the given figure are equal. The direction of  $\vec{OA} + \vec{OB} - \vec{OC}$  with x-axis will be:



### RCC SENIOR TEST SERIES 2026

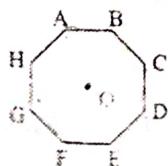
1)  $\sqrt{2}(\hat{i} + \hat{j} + \hat{k})$       2)  $2(\hat{i} + \hat{j} + \hat{k})$

3)  $\sqrt{2}(\hat{i} + \hat{j})$       4)  $(\hat{i} + \hat{j})$

03. In an octagon ABCDEFGH of equal side, what is the sum of

$$\vec{AB} + \vec{AC} + \vec{AD} + \vec{AE} + \vec{AF} + \vec{AG} + \vec{AH},$$

if  $\vec{AO} = 2\hat{i} + 3\hat{j} - 4\hat{k}$



1)  $-16\hat{i} - 24\hat{j} + 32\hat{k}$       2)  $16\hat{i} + 24\hat{j} + 32\hat{k}$

3)  $16\hat{i} + 24\hat{j} - 32\hat{k}$       4)  $16\hat{i} - 24\hat{j} + 32\hat{k}$

04. Let  $|\vec{A_1}| = 3$ ,  $|\vec{A_2}| = 5$  and  $|\vec{A_1} + \vec{A_2}| = 5$ . The value of  $(2\vec{A_1} + 3\vec{A_2}) \cdot (3\vec{A_1} - 2\vec{A_2})$  is:

1) -106.5      2) -99.5

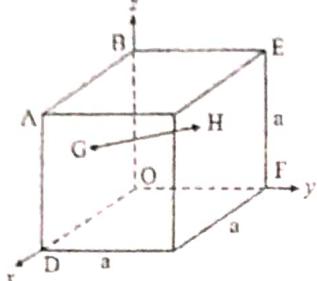
3) -112.5      4) -118.5

02. What will be the projection of vector

$\vec{A} = \hat{i} + \hat{j} + \hat{k}$  on vector  $\vec{B} = \hat{i} + \hat{j}$ ?

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05. In the cube of side 'a' shown in the figure, the vector from the central point of the face ABOD to the central point of the face BEFO will be:



- $$1) \frac{1}{2} a (\hat{k} - \hat{i}) \quad 2) \frac{1}{2} a (\hat{i} - \hat{k})$$

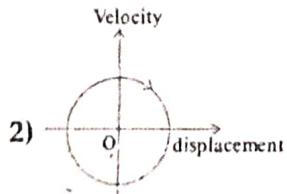
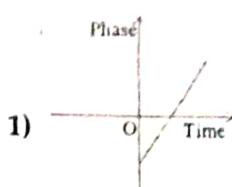
- 3)  $\frac{1}{2} a (\hat{j} - \hat{i})$       4)  $\frac{1}{2} a (\hat{j} - \hat{k})$

06. Two forces P and Q, of magnitude  $2F$  and  $3F$ , respectively are at an angle  $\theta$  with each other.  
• If the force Q is doubled then their resultant also gets doubled. Then, the angle is:

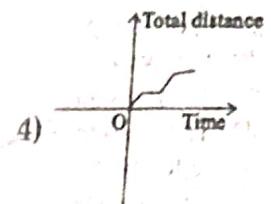
- 1)  $120^\circ$       2)  $60^\circ$       3)  $90^\circ$       4)  $30^\circ$

- B is

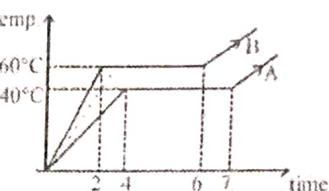
08. Which of the following curves possibly represent one-dimensional motion of a particle?



- 



09. In figure given two solid A and B of same mass are heated at constant rate by same source then find



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- (i) ratio of latent heat for fusion

- 1)  $\frac{3}{4}$       2)  $\frac{4}{3}$       3)  $\frac{5}{3}$       4)  $\frac{3}{5}$

10. In the Previous question ratio of specific heat for solid state

$$\left( \frac{S_A}{S_B} \right)$$

- 1)  $\frac{1}{3}$       2) 3      3) 6      4)  $\frac{1}{6}$

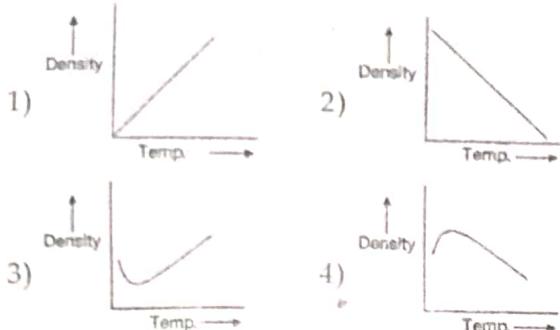
11. A pendulum clock having copper rod keeps correct time at  $20^{\circ}\text{C}$ . It gains 15 seconds per day if cooled to  $0^{\circ}\text{C}$ . Calculate the coefficient of linear expansion of copper.

- 1)  $1.74 \times 10^{-5}/^{\circ}\text{C}$       2)  $1.88 \times 10^{-3}/^{\circ}\text{C}$   
 3)  $2.48 \times 10^{-4}/^{\circ}\text{C}$       4)  $0.01 \times 10^{-5}/^{\circ}\text{C}$

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12. Which of the following curve represent variation of density of water with temperature best



13. A body of mass 2 kg has a specific heat,  $s = 400 \text{ J/kg}\cdot\text{C}$ . Find amount of heat needed to increase temperature from  $30^\circ\text{C}$  to  $60^\circ\text{C}$

- 1) 12000 J                    2) 24000 J  
 3) 36000 J                    4) 48000 J

14. A rectangular block is heated from  $0^{\circ}\text{C}$  to  $100^{\circ}\text{C}$ . The percentage increase in its length is 0.10%. What will be the percentage increase in its volume?

- 1) 0.03%                  2) 0.10%  
3) 0.30%                  4) None of these

15. Two spheres of the same radius are made from the same material. One is hollow and the other is solid. If they are heated together from  $20^{\circ}\text{C}$  to  $100^{\circ}\text{C}$ .

- 1) both will expand equally
  - 2) hollow sphere will expand more
  - 3) solid sphere will expand more
  - 4) the relative expansion of solid and hollow sphere depends on the material of sphere

16. An iron tyre is to be fitted onto a wooden wheel 1.0 m in diameter. The diameter of the tyre is 6 mm smaller than that of wheel. The tyre should be heated so that its temperature increases by a minimum of (Coefficient of

volume expansion of iron is  $3.6 \times 10^{-5}/^{\circ}\text{C}$ )

- 1)  $167^{\circ}\text{C}$       2)  $334^{\circ}\text{C}$   
3)  $500^{\circ}\text{C}$       4)  $1000^{\circ}\text{C}$

17. A beaker contains 200 gm of water. The heat capacity of the beaker is equal to that of 20 gm of water. The initial temperature of water in the breaker is  $20^{\circ}\text{C}$ . If 440 gm of hot water at  $92^{\circ}\text{C}$  is poured in it, the final temperature (neglecting radiation loss) will be nearest to

- 1) 58°C                          2) 68°C  
3) 73°C                          4) 78°C

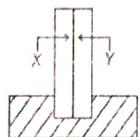
18. 20 g of water at 10°C is mixed with 100 g water at 80°C. Find final temperature.

- 1)  $5.83^{\circ}\text{C}$       2)  $55.3^{\circ}\text{C}$   
3)  $6.83^{\circ}\text{C}$       4)  $68.3^{\circ}\text{C}$

19. 10 g of ice at  $0^{\circ}\text{C}$  is mixed with 10 g water at  $80^{\circ}\text{ C}$ . Find final temperature

- 1) 10°C                          2) 20°C  
3) 30°C                          4) 0°C

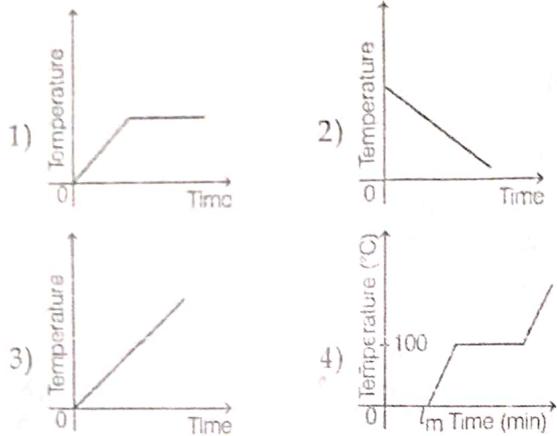
20. A bimetallic strip consists of metals X and Y . It is mounted rigidly at the base as shown in figure. The metal X has a higher coefficient of expansion compared to that of metal Y . When bimetallic strip is placed in a cold bath, then



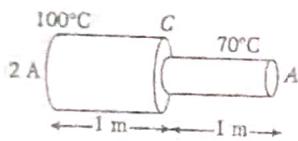
- 1) it will bend towards the right
  - 2) it will bend towards the left
  - 3) it will not bend but shrink
  - 4) it will neither bend nor shrink

QUESTION BOOKLET VERSION : 11

21. A block of ice at  $0^{\circ}\text{C}$  is slowly heated and converted into steam at  $100^{\circ}\text{C}$ . Which of these curves represent the phenomenon qualitatively?

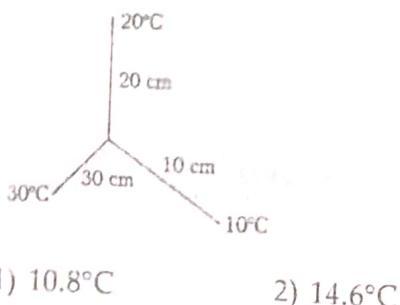


22. A metal rod of length 2m has cross-sectional areas  $2A$  and  $V A$  as shown in figure. The ends are maintained at Temperatures  $100^{\circ}\text{C}$  and  $70^{\circ}\text{C}$ . The temperature at middle point C is



- 1) 80°C                          2) 85°C  
 3) 90°C                          4) 95°C

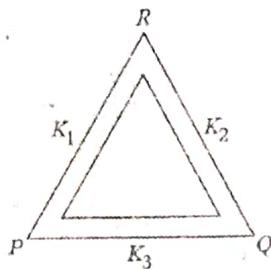
23. Three rods made of the same material and having same cross-sectional area but different length 10cm, 20 cm and 30 cm are joined as shown. The temperature of the junction is



- 1)  $10.8^{\circ}\text{C}$       2)  $14.6^{\circ}\text{C}$

- 3)  $16.4^{\circ}\text{C}$       4)  $18.2^{\circ}\text{C}$

24. Three rods of same dimensions are arranged as shown in figure. They have thermal conductivities  $K_1$ ,  $K_2$  and  $K_3$ . The points P and Q are maintained at different temperatures. For the heat flow at the same rate along PRQ and PQ which of the following option is correct?



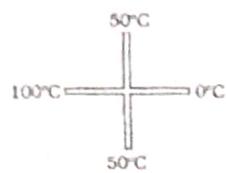
- 1)  $K_3 = \frac{1}{2}(K_1 + K_2)$
  - 2)  $K_3 = K_1 + K_2$
  - 3)  $K_3 = \frac{K_1 K_2}{K_1 + K_2}$
  - 4)  $K_3 = 2(K_1 + K_2)$

25. A wall has two layers A and B, each made of different material. Both the layers have the same thickness. The thermal conductivity for A is twice that of B and, under steady condition, the temperature difference across the wall is  $36^{\circ}\text{C}$ . The temperature difference across the layer A is

- 1)  $6^{\circ}\text{C}$
  - 2)  $12^{\circ}\text{C}$
  - 3)  $24^{\circ}\text{C}$
  - 4)  $18^{\circ}\text{C}$

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26. Two similar rods are joined as shown in figure. Then temperature of junction is (assume no heat loss through lateral surface of rod and temperatures at the ends are shown in steady state)



27. A vector in x-y plane makes an angle of  $30^\circ$  with y-axis. The magnitude of y-component of vector is  $2\sqrt{3}$ . The magnitude of x-component of the vector will be

- 1)  $\frac{1}{\sqrt{3}}$       2) 6  
3)  $\sqrt{3}$       4) 2

28. When vector  $\vec{A} = 2\hat{i} + 3\hat{j} + 2\hat{k}$  is subtracted from vector  $\vec{B}$ , it gives a vector equal to  $2\hat{j}$ . Then the magnitude of vector  $\vec{B}$  will be.

- 1)  $\sqrt{33}$       2) 3  
3)  $\sqrt{6}$       4)  $\sqrt{5}$

29. If two vectors  $\vec{P} = \hat{i} + 2m\hat{j} + m\hat{k}$  and  $\vec{Q} = 4\hat{i} - 2\hat{j} + m\hat{k}$  are perpendicular to each other. Then, the value of m will be

- 1) 1      2) -1  
3) -3      4) 2

30. Two vectors  $\vec{A}$  and  $\vec{B}$  have equal magnitudes. If magnitude of  $\vec{A} + \vec{B}$ , is equal to two times the  $\vec{A} - \vec{B}$ , then the angle between  $\vec{A}$  and  $\vec{B}$

will be:

- 1)  $\sin^{-1}\left(\frac{3}{5}\right)$   
2)  $\sin^{-1}\left(\frac{1}{5}\right)$   
3)  $\cos^{-1}\left(\frac{3}{5}\right)$   
4)  $\cos^{-1}\left(\frac{1}{3}\right)$

31. Which of the following relations is true for two unit vectors  $\hat{A}$  and  $\hat{B}$  making an angle  $\theta$  to each other ?

- 1)  $|\hat{A} + \hat{B}| = |\hat{A} - \hat{B}| \tan \frac{\theta}{2}$   
2)  $|\hat{A} - \hat{B}| = |\hat{A} + \hat{B}| \tan \frac{\theta}{2}$   
3)  $|\hat{A} + \hat{B}| = |\hat{A} - \hat{B}| \cos \frac{\theta}{2}$   
4)  $|\hat{A} - \hat{B}| = |\hat{A} + \hat{B}| \cos \frac{\theta}{2}$

32. Statement I: Two forces  $(\vec{P} + \vec{Q})$  and  $(\vec{P} - \vec{Q})$   $\vec{P} \perp \vec{Q}$ , when act an angel  $\theta_1$ , to each other magnitude of their resultant is  $\sqrt{3(P^2 + Q^2)}$ , when they act at angle  $\theta_2$ , the magnitude of their resultant becomes  $\sqrt{2(P^2 + Q^2)}$ . This is possible only when  $\theta_1 < \theta_2$ .

Statement II: In the situation given above.  $\theta_1 = 60^\circ$  and  $\theta_2 = 90^\circ$

- 1) Statement-I is false but Statement-II is true  
2) Both Statement-I and Statement-II are true  
3) Statement-I is true but Statement-II is false  
4) Both Statement-I and Statement-II are false.

33. Liquids A and B are at  $30^\circ\text{C}$  and  $20^\circ\text{C}$ . When equal masses are mixed the temperature of the mixture is found to be  $26^\circ\text{C}$ . Their specific heats are in the ratio of :-

- 1) 3 : 2      2) 1 : 1  
3) 2 : 3      4) 4 : 3

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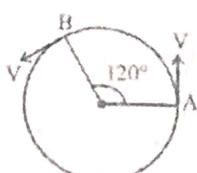
34. The water equivalent of 20 g of aluminium (specific heat 0.2 cal / g - °C), is :-  
1) 40 g                    2) 4 g  
3) 8 g                    4) 160 g

35. 100 g of ice (latent heat 80 cal/g, at 0°C) is mixed with 100 g of water (specific heat 1 cal/g - °C) at 80°C. The final temperature of the mixture will be :-  
1) 0°C                    2) 40°C  
3) 80°C                    4) < 0°C

36. A particle moving in a straight line covers half the distance with speed 6 m/s. The other half is covered in two equal time intervals with speeds 9 m/s and 15 m/s respectively. The average speed of the particle during the motion is :  
1) 8.8m/s                    2) 10m/s  
3) 9.2m/s                    4) 8m/s

37. A particle is moving with constant speed in a circular path. When the particle turns by an angle 90°, the ratio of instantaneous velocity to its average velocity is  $\pi:x\sqrt{2}$ . The value of x will be  
1) 2                    2) 5                    3) 1                    4) 7

38. As shown in the figure, a particle is moving with constant speed  $\pi$  m/s. Considering its motion from A to B, the magnitude of the average velocity is:



- 1)  $\pi m/s$       2)  $\sqrt{3}m/s$   
 3)  $2\sqrt{3}m/s$       4)  $1.5\sqrt{3}m/s$

39. An object moves with speed  $v_1$ ,  $v_2$  and  $v_3$  along a line segment AB, BC and CD respectively as shown in figure. Where AB=BC and AD=3 AB, then average speed of the object will be:



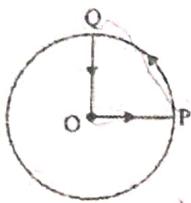
1)  $\frac{v_1 v_2 v_3}{3(v_1 v_2 + v_2 v_3 + v_3 v_1)}$       2)  $\frac{3v_1 v_2 v_3}{(v_1 v_2 + v_2 v_3 + v_3 v_1)}$   
 3)  $\frac{(v_1 + v_2 + v_3)}{3}$       4)  $\frac{(v_1 + v_2 + v_3)}{3v_1 v_2 v_3}$

40. A car covers the first half of the distance between two places at 40 km/h and other half at 60 km/h. The average speed of the car is  
 1) 40 km/h  
 2) 45 km/h  
 3) 48 km/h  
 4) 60 km/h

41. A person travelling on a straight line moves with a uniform velocity  $V_1$  for a distance  $x$  and with a uniform velocity  $v_2$  for the next  $\frac{3}{2}x$  distance.  
 The average velocity in this motion is  $\frac{50}{7} m/s$ . If  $v_1$  is 5m/s then  $v_2 = \underline{\hspace{2cm}}$  m/s.  
 1) 50      2) 60  
 3) 70      4) 80

# **QUESTION BOOKLET VERSION : 11**

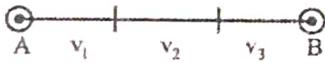
42. A person starts his journey from centre 'O' of the park and comes back to the same position following path OPQO as shown in the figure. The radius of path taken by the person is 200 m and he takes 3 min 58 sec to complete his journey. The average speed of the person is \_\_\_\_\_  $\text{ms}^{-1}$  (taken  $\pi = 3.14$ )






43. A car covers AB distance with first one-third at velocity  $V_1 \text{ ms}^{-1}$ , second one-third at  $v_2 \text{ ms}^{-1}$  and last one-third at  $v_3 \text{ ms}^{-1}$ . If

$v_3 = 3v_1$ ,  $v_2 = 2v_1$  and  $v_1 = 11 \text{ ms}^{-1}$  then the average velocity of the car is \_\_\_\_\_  $\text{ms}^{-1}$ .



- 1) 8                          2) 18  
 3) 28                          4) 10

44. A 10 g ice cube is dropped into 45 g of water kept in a glass. If the water was initially at a temperature of  $28^{\circ}\text{C}$  and the temperature of ice  $-15^{\circ}\text{C}$ , find the final temperature (in  $^{\circ}\text{C}$ ) of water. (Specific heat of ice = 0.5 cal/g  $^{-\circ}\text{C}$  and L = 80 cal/g)

- 1) 14                                    2) 7  
3) 28                                    4) None

**RCC**

45. Calculate the time required to heat 20 kg of water from  $10^{\circ}\text{C}$  to  $35^{\circ}\text{C}$  using an immersion heater rated 1000 W. Assume that 80% of the power input is used to heat the water. Specific heat capacity of water =  $4200 \text{ J/kg}\cdot\text{k}$

1) 40 s

- 1) 40 min                          2) 44 min  
3) 36 min                          4) 48 min

QUESTION BOOKLET VERSION : 11  
SECTION 'B' - CHEMISTRY

46. Match the column :

Column-I	Column-II
Prefix	Suffix
a. Cyano	i. -oyl halide
b. Carboxy	ii. -oate
c. Alkoxy carbonyl	iii. -oic acid
d. Halo carbonyl	iv. Nitrile

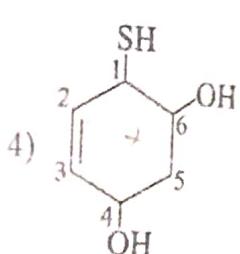
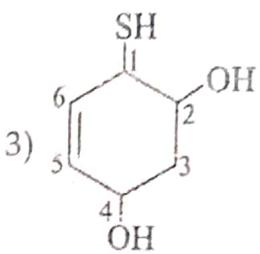
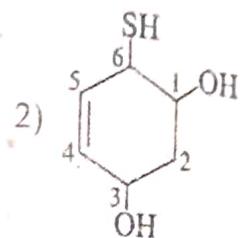
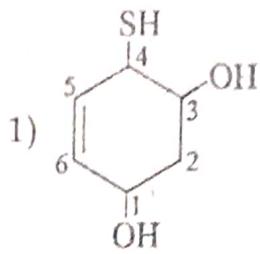
- 1) a-iii, b-iv, c-i, d-ii      2) a-iv, b-iii, c-ii, d-i  
 3) a-ii, b-i, c-iv, d-iii      4) a-iii, b-ii, c-i, d-iv

47. Match the compounds given in Column I with the IUPAC names given in Column II and mark the appropriate choice.

Column-I	Column-II
A)	i) 3, 7-Dimethyl-octa-1, 3, 6-triene
B)	ii) 4-Methyl-5-oxohexanoic acid
C)	iii) 3, 3, 5-Trimethyl hex-1-en-2-ol
D)	iv) 4-Hydroxy-4-methylpentan-2-one

- 1) (A)-(ii), (B)-(i), (C)-(iii), (D)-(iv)  
 2) (A)-(iv), (B)-(ii), (C)-(i), (D)-(iii)  
 3) (A)-(i), (B)-(iii), (C)-(ii), (D)-(iv)  
 4) (A)-(iii), (B)-(iv), (C)-(ii), (D)-(i)

48. Select the structure with correct number for the IUPAC name of the given compound



49. The maximum kinetic energy of photoelectrons ejected from a metal, when it is irradiated with radiation of frequency  $2 \times 10^{14} \text{ s}^{-1}$  is  $6.63 \times 10^{-20} \text{ J}$ . The threshold frequency of the metal is

- 1)  $2 \times 10^{14} \text{ s}^{-1}$       2)  $3 \times 10^{14} \text{ s}^{-1}$   
 3)  $2 \times 10^{-14} \text{ s}^{-1}$       4)  $1 \times 10^{14} \text{ s}^{-1}$

50. When the electron of hydrogen atom jumps from  $n=4$  to  $n=1$  state, the number of spectral lines emitted is

- 1) 45      2) 9  
 3) 6      4) 3

51. The line spectrum of  $\text{He}^+$  ion will resemble that of:

- 1) hydrogen atom      2)  $\text{Li}^+$  ion  
 3) helium atom      4) lithium atom

52. A 0.66 kg ball is moving with a speed of 100 m/s. The associated wavelength will be: ( $\hbar = 6.6 \times 10^{-34} \text{ Js}$ )

- 1)  $6.6 \times 10^{-32} \text{ m}$       2)  $6.6 \times 10^{-34} \text{ m}$   
 3)  $1.0 \times 10^{-35} \text{ m}$       4)  $1.0 \times 10^{-32} \text{ m}$

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53. According to the Bohr theory, which of the following transitions in the hydrogen atom will give rise to the least energetic photon?

- 1)  $n = 26$  to  $n = 1$       2)  $n = 5$  to  $n = 4$   
 3)  $n = 6$  to  $n = 5$       4)  $n = 5$  to  $n = 3$

54. The energies  $E_1$  and  $E_2$  of two radiations are 25 eV and 50 eV respectively. The relation between their wavelengths i. e.,  $\lambda_1$  and  $\lambda_2$  will be:

- 1)  $\lambda_1 = \lambda_2$       2)  $\lambda_1 = 2\lambda_2$   
 3)  $\lambda_1 = 4\lambda_2$       4)  $\lambda_1 = 1/2\lambda_2$

55. Which one of the following constitutes a group of the isoelectronic species :

- 1)  $NO^+, C_2^{2+}, CN^-, N_2$       2)  $CN^-, N_2, O_2^{2-}, C_2^{2-}$   
 3)  $N_2, O_2^-, NO^+, CO$       4)  $C_2^{2-}, O_2^-, CO, NO$

56. The energy of an electron in the ground state ( $n = 1$ ) for  $He^+$  ion is  $-xJ$ , then that for an electron in  $n = 2$  state for  $Be^{3+}$  ion in J is :

- 1)  $-\frac{4}{9}x$       2)  $-x$   
 3)  $-\frac{x}{9}$       4)  $-4x$

57. Given below are two statements :

Statement I : The Balmer spectral line for H-atom with lowest energy is located at

$$\frac{5}{36} R_H cm^{-1}$$

Statement II : When the temperature of blackbody increases, the maxima of the wavelength shifts to shorter wavelength.

In the light of the above statements, choose the correct answer from the options given below.

- 1) Statement I is true but Statement II is false  
 2) Statement I is false but Statement II is true  
 3) Both Statement I and Statement II are true  
 4) Both Statement I and Statement II are false

58. The frequency of radiation emitted when the electron falls from  $n = 4$  to  $n = 1$  in a H-atom will be: (Given ionization energy of H =  $2.18 \times 10^{-18} J$  atom $^{-1}$  and  $h = 6.625 \times 10^{-34} Js$ )

- 1)  $3.08 \times 10^{15} s^{-1}$       2)  $2.00 \times 10^{15} s^{-1}$   
 3)  $1.54 \times 10^{15} s^{-1}$       4)  $1.03 \times 10^{15} s^{-1}$

59. Calculate de-Broglie wavelength of an electron travelling at 1% of the speed of light:

- 1)  $2.73 \times 10^{-24} m$       2)  $2.42 \times 10^{-10} m$   
 3)  $242 \times 10^{10} m$       4) none of these

60. Orbital is:

- 1) circular path around the nucleus in which the electron revolves  
 2) space around the nucleus where the probability of finding the electron is maximum  
 3) amplitude of electrons wave  
 4) none of these

61. For an electron, if the uncertainty in velocity is  $\Delta v$ , the uncertainty in its position ( $\Delta x$ ) is given by.

- 1)  $\frac{hm}{4\pi\Delta v}$       2)  $\frac{4\pi}{hm\Delta v}$   
 3)  $\frac{h}{4\pi m\Delta v}$       4)  $\frac{4\pi m}{h\Delta v}$

**QUESTION BOOKLET VERSION : 11**

62. Statement-1 : Absorption spectrum consists of some bright lines separated by dark spaces

Statement 2 : Emission spectrum consists of dark lines

1) If both statements are correct and statement-2 is not correct explanation of statement-1

2) If both statements are correct but statement-2 is not correct explanation of statement-1

3) If statement-1 is correct but statement-2 is wrong

4) If both statements are wrong

5) If statement-1 is wrong but statement-2 is correct

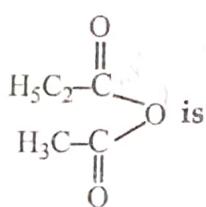
63. In a hydrogen atom, if energy of an electron in ground state is  $-13.6\text{ eV}$ , then that in the 2<sup>nd</sup> excited state is :

- 1)  $-1.51\text{ eV}$
- 2)  $-3.4\text{ eV}$
- 3)  $-6.04\text{ eV}$
- 4)  $-13.6\text{ eV}$

64. The energy of electron in hydrogen atom in its ground state is  $-13.6\text{ eV}$ . The energy of the level corresponding to the quantum number equal to 5 is

- 1)  $-0.54\text{ eV}$
- 2)  $-0.85\text{ eV}$
- 3)  $-0.64\text{ eV}$
- 4)  $-0.40\text{ eV}$

65. The IUPAC name of the compound



- 1) Propionic acetic anhydride
- 2) Ethanoic propanoic anhydride
- 3) Propionic ethanoic anhydride
- 4) Acetic propanoic anhydride

**66. LIST - 1**
**LIST - 2**

(Structural formula) (Name of compound)

A)  $\text{H}_2\text{C} = \text{CHCN}$  3) Propenamide

B)  $\text{H}_2\text{C} = \text{CH}-\text{CONH}_2$  1) But-1-yn-3-one

C)  $\text{H}_2\text{C} = \text{CHCHO}$  5) Propenenitrile

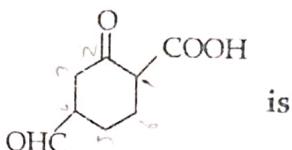
D)  $\text{HC} \equiv \text{C}-\overset{\text{O}}{\underset{||}{\text{C}}}-\text{CH}_3$  4) But-3-yn-2-one

5) Propenal

The correct match is

	A	B	C	D
1)	1	3	5	2
2)	3	1	5	2
3)	3	1	5	4
4)	3	1	4	5

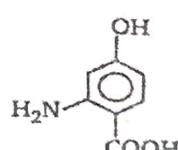
67. The correct IUPAC name of the compound



is

- 1) 5-Carboxy-3-oxocyclohexanecarboxal-adehyde
- 2) 2-Carboxy-5-formylcyclohexane
- 3) 4-Formyl-2-oxocyclohexanecarboxylic acid
- 4) 4-Carboxyl-3-oxocyclohexanal

68. Write IUPAC name of following compound :



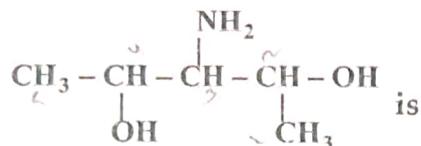
- 1) 2-amino-4-hydroxybenzenecarboxylic acid
- 2) 6-amino-4-hydroxybenzoic acid
- 3) 3-amino-4-carboxyphenol
- 4) 2-carboxy-4-hydroxyaniline

## QUESTION BOOKLET VERSION : 11

69. Wrong IUPAC name is

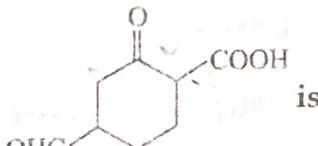
- 1)  $\text{CH}_3\text{CH}_2\text{CONH}_2$  Propanamide  
 2)  $\text{CH}_3\text{CH}_2\text{COOCH}_3$  Methyl propanoate  
 3)  $\text{CH}_3-\overset{\text{CH}_3}{\underset{|}{\text{CH}}}-\text{CH}=\text{CH}-\text{CH}_3$   
     2-Methyl pent-3-ene  
 4)  $\text{CH}_3\text{CH}_2-\overset{\text{O}}{\underset{\text{CH}_2-\text{CH}_3}{\text{CH}}}-\text{CH}_3$  2-Ethoxy butan

70. IUPAC name of the compound



- 1) 3-amino, 1-methyl, 2-hydroxy-1-butanol  
 2) 3-amino-4-hydroxy-2-pentanol  
 3) 3-amino-1-methyl, 1, 3-butanediol  
 4) 3-amino-2, 4-pentanediol

71. The correct IUPAC name of the compound



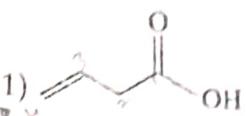
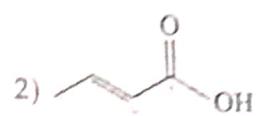
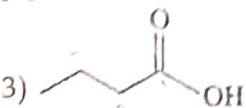
- 1) 5-carboxy-3-oxocyclohexanecarboxyaldehyde  
 2) 2-carboxy-5-formylecyclohexane  
 3) 4-formyl-2-oxocyclohexanecarboxylic acid  
 4) 4-carboxy-3-oxocyclohexanal

72. The IUPAC name of  $\text{C}_2\text{H}_5\overset{\text{CH}_3}{\underset{||}{\text{C}}}-\text{CH}_2-\overset{\text{CH}_3}{\underset{|}{\text{CH}}}\text{NH}_2$  is

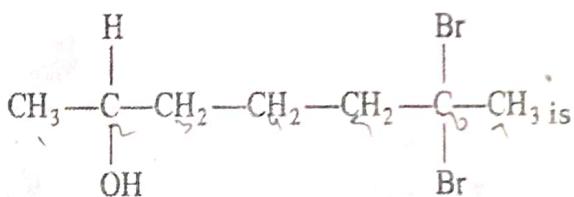
1) 4-ethylpent-4-en-2-amine  
 2) 2-amino-4-ethylpent-4-ene  
 3) 2-ethylpentan-4-amine

- 4) 4-amino-2-ethylpent-1-ene

73. 3-Butenoic acid (or But-3-enoic acid) is represented as :

- 1)   
 2)   
 3)   
 4) None of these

74. The IUPAC name of



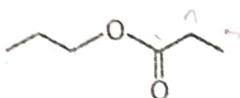
- 1) 6, 6-dibromoheptan-2-ol  
 2) 2, 2-dibromoheptan-2-ol  
 3) 6, 6-dibromoheptan-2-al  
 4) None of these

75. Which of the following compound is wrongly named ?

- 1)  $\text{CH}_3\text{CH}_2\overset{\text{Cl}}{\underset{|}{\text{CH}}}\text{CH}_2\text{CH}_2\text{COOH}$ ; 2-chloro pentanoic acid  
 2)  $\text{CH}_3\overset{\text{CH}_3}{\underset{|}{\text{C}}}=\overset{\text{CH}_3}{\underset{|}{\text{C}}}\text{CH}_2\text{COOH}$ ;  
     2-Methyl hex-3-enoic acid  
 3)  $\text{CH}_3\text{CH}_2\overset{\text{CH}_3}{\underset{|}{\text{CH}}}=\text{CHCOCH}_3$ ; Hex-3-en-2-one  
 4)  $\text{CH}_3-\overset{\text{CH}_3}{\underset{|}{\text{CH}}}\text{CH}_2\text{CH}_2\text{CHO}$ ; 4-Methyl pentanal

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76. The IUPAC name of the following compound is



- 1) *n*-propyl ethanoate
- 2) Ethyl propanoate
- 3) Pentanoic anhydride
- 4) *n*-propyl propanoate

77. The radius of H-atom is  $0.53\text{ \AA}$ . The radius of  $_{3}\text{Li}^{2+}$  is of:

- |                              |                              |
|------------------------------|------------------------------|
| 1) $0.53\text{ \AA}^{\circ}$ | 2) $0.17\text{ \AA}^{\circ}$ |
| 3) $0.57\text{ \AA}^{\circ}$ | 4) $0.99\text{ \AA}^{\circ}$ |

78. The radius of the first Bohr orbit of the H-atom is  $r$ . Then the radius of the first orbit of  $\text{Li}^{2+}$  will be

- |          |          |
|----------|----------|
| 1) $r/9$ | 2) $r/3$ |
| 3) $3r$  | 4) $9r$  |

79. In spectral series of hydrogen, the series which does not come in infrared region is

- |            |             |
|------------|-------------|
| 1) Pfund   | 2) Brackett |
| 3) Paschen | 4) Lyman    |

80. Calculate the energy in joule corresponding to light of wavelength 45 nm: (Planck's constant  $h=6.63\times 10^{-34}$  Js ; speed of light  $c=3\times 10^8\text{ ms}^{-1}$ )

- |                          |                          |
|--------------------------|--------------------------|
| 1) $4.42\times 10^{-15}$ | 2) $4.42\times 10^{-18}$ |
| 3) $6.67\times 10^{15}$  | 4) $6.67\times 10^{11}$  |

81. A particular station of All India Radio, New Delhi, broadcasts on a frequency of 1,368 kHz (kilohertz). The wavelength of the electromagnetic radiation emitted by the transmitter is

- 1) 219.3 m  
2) 219.2 m  
3) 2192 m  
4) 21.92 cm

82. Select the correct statements from the following

- a. Atoms of all elements are composed of two fundamental particles
- b. The mass of the electron is  $9.10939\times 10^{-31}$  kg
- c. All the isotopes of a given element show same chemical properties
- d. Protons and electrons are collectively known as nucleons
- e. Dalton's atomic theory, regarded the atom as an ultimate particle of matter

Choose the correct answer from the options given below

- 1) c, d, and e only
- 2) a and e only
- 3) b, c and e only
- 4) a, b and c only

83. Statement-1 : The atoms of different elements having same mass number but different atomic number are known as isobars

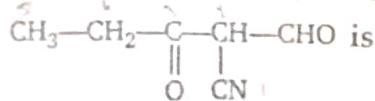
Statement-2 : The sum of protons and neutrons, in the isobars is always different

- 1) If both statements are correct and statement-2 is not correct explanation of statement-1
- 2) if both statements are correct but statement-2 is not correct explanation of statement-1
- 3) If statement-1 is correct but statement-2 is wrong
- 4) If both statements are wrong
- 5) If statement-1 is wrong but statement-2 is correct

QUESTION BOOKLET VERSION : 11

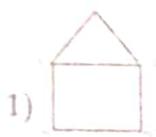


84. The correct IUPAC name of compound;



- 1) 2-Cyano-3-oxopentanal
- 2) 2-Formyl-3-oxopentanenitrile
- 3) 2-Cyano-1, 3-pentanedione
- 4) 1, 3-Dioxo 2-cyanopentane

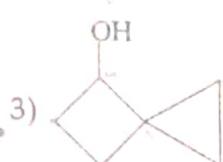
85. Select the incorrect IUPAC Name



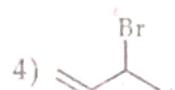
Bicyclo [2.1.0] pentane



7-bromobicyclo[4.2.0]-2-octene

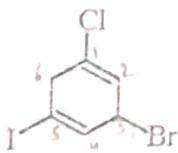


spiro [3.2] hexan-4-ol



3-Bromobut-1-ene

86. The IUPAC name of the compound shown below is



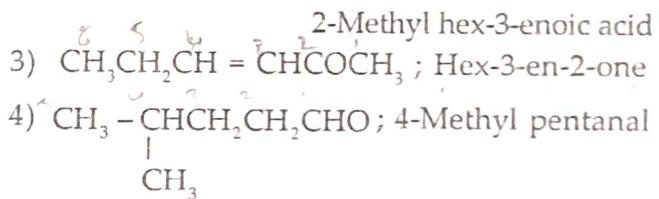
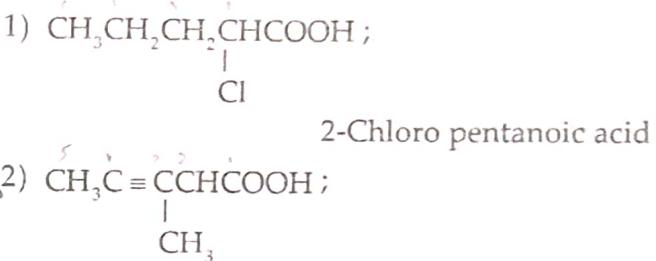
- 1) 3-bromo-1-chloro-5-iodocyclohexan-1,4-diene
- 2) 3-chloro-5-iodo-1-bromocyclohexa-2,5-diene
- 3) 3-bromo-5-chloro-1-iodocyclohexa-1,4-diene
- 4) 5-bromo-3-chloro-1-iodocyclohexa-1,3-diene

87. Statement-I : No. of carbon present in Bicyclo bridge which is written in [ ] in decreasing order.

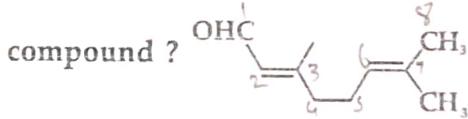
Statement-II : No. of carbon present in spiro route which is written in [ ] in increasing order.

- 1) Both statement I and II are correct.
- 2) Both statement I and II are incorrect.
- 3) Statement I is correct but statement II is incorrect
- 4) Statement II is correct but statement I incorrect

88. Which of the following compound is wrongly named?



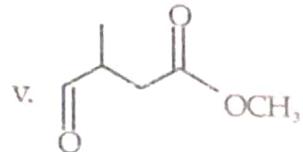
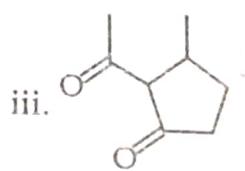
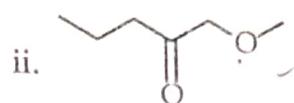
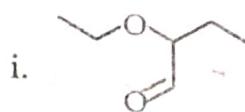
89. Which IUPAC name is correct for the given compound ?



- 1) 3,7-Dimethylocta-2,6-dienal
- 2) 2,6-Dimethyloct-2,6-dienal-8
- 3) 7-Formyl-2,6-dimethylhept-2,6-diene
- 4) 7-Aldo-2,6-dimethylhept-2,6-diene

# QUESTION BOOKLET VERSION : 11

90. Many organic compound contain more than one functional group. Which of the following is both ketone and an ether?



- 1) i only                                    2) i and ii  
 3) ii and v                                4) iii and iv

## SECTION 'C' BIOLOGY

91. Match the plant with kind of life cycle it exhibits.

Column-I	Column-II
a <i>Spirogyra</i>	i Dominant diploid sporophyte vascular plant, with highly reduced male or female gametophyte
b Fern	ii Dominant haploid free living gametophyte
c <i>Funaria</i>	iii Dominant diploid sporophyte alternating with reduced gametophyte called prothallus
d <i>Cycas</i>	iv Dominant haploid leafy gametophyte alternating with partially dependent multicellular sprophyte

Choose the correct answer from the options given below

- 1) a-ii, b-iv, c-i, d-iii    2) a-iv, b-i, c-ii, d-iii  
 3) a-ii, b-iii, c-iv, d-i    4) a-iii, b-iv, c-i, d-ii ✗

92. Water is essential to develop a new plant body with respect to sexual reproduction. This statement is true for which plant group?

- 1) Only bryophytes  
 2) Only pteridophytes  
 3) Both bryophytes and pteridophytes  
 4) Bryophytes, pteridophytes and gymnosperms.

93. Assertion (A) : Like pteridophytes, sporophyte is a dominant phase in gymnosperms.

Reason (R) : The gametophyte stages are independent in the pteridophytes.

- 1) (A) and (R) are True and the (R) is a correct explanation of the (A).  
 2) (A) and (R) are True but (R) is not a correct explanation of the (A).  
 3) (A) is true but the (R) is false.  
 4) (A) is false but (R) is true.

94. Archegoniophore is present in

- 1) *Funaria*                  2) *Marchantia*.  
 3) *Chara*.                  4) *Adiantum*.

95. The correct sequence of the ploidy moss protonemal cell, primary endosperm nucleus in dicots, leaf cell of a moss, prothallus cell of a fern, gemma cell in *Marchantia*, meristematic cell of monocot, ovum of liverwort, and zygote of a fern is

- 1) n, 3n, n, n, n, 2n, n, 2n  
 2) 3n, 2n, n, n, n 2n, n, n  
 3) 2n, 3n, 2n, n, n, n, n, n  
 4) n, 3n, n, n, n, n, 2n, 2n

96. Assertion (A) : Mosses reduce the impact of falling rain and prevent soil erosion.

Reason (R) : Mosses forms dense mats on the soil.

- 1) (A) and (R) are True and the (R) is a correct explanation of the (A).  
 2) (A) and (R) are True but (R) is not a correct explanation of the (A).  
 3) (A) is true but the (R) is false.  
 4) (A) is false but (R) is true.

97. Read the following statements :

- a) The male or female cones or strobili are borne on same tree in *Pinus* ✓  
 b) In *Cycas*, male cones and megasporophylls are borne on different trees. ✓  
 c) Stem of *Cycas* is branched and of *Pinus* and *Cedrus* is unbranched  
 d) In gymnosperms, generally tap roots are found. ✓

Select the correct statements :

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

98. Which of the following statement(s) are correct?

- a. Ovules of gymnosperms are not enclosed within the ovaries.  
 b. *Sphagnum*, provide peat which is used as a packing material for transshipment of living material.  
 c. Presence of water is must for fertilization in pteridophytes.  
 d. Pteridophytes are called amphibians of the plant kingdom.

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

Identify X, Y and Z in the table given below :

Classes	Major pigments	Stored food	Flagella
Chlorophyceae	Chlorophyll-a and b	Y	2-8, equal, apical
Phaeophyceae	X	Mannitol Laminarin	2, unequal, lateral
Rhodophyceae	Chlorophyll-a and d	Floridean starch	Z

- 1) X = Fucoxanthin, Y = Starch, Z = 2 - 8 flagella
- 2) X = Phycobilins, Y = Mannitol, Z = Flagella absent
- 3) X = Chlorophyll-e, Y = Laminarin, Z = 2 - flagella
- 4) X = Chlorophyll-a and c, Y = Starch, Z = Flagella absent

100. Sulphate esters are present in the cell wall of

- 1) Ectocarpus and Dictyota.
- 2) Gellidium and Gracilaria.
- 3) Ectocarpus and Sargassum.
- 4) Spirogyra and Chara.

101. Which of the following branch of taxonomy considers more than hundred characters at the same time giving equal weightage to each of them?

- 1) Numerical taxonomy
- 2) Chemotaxonomy
- 3) Biochemical taxonomy
- 4) Cytotaxonomy

102. In gymnosperms, the seed that develop after fertilization are naked. It means

- 1) Seeds are very small and not visible with naked eyes
- 2) Seeds are not covered by any ovule wall
- 3) Seeds are not covered by any ovary wall
- 4) Seeds are enclosed in pericarp

103. The spread of living pteridophytes is limited and restricted to narrow geographical regions because

- A. Gametophytes are dependent on sporophytes.
- B. Gametophytes require cool, damp, and shady places to grow.
- C. They need water for fertilization.
- 1) Only B is correct
- 2) Only B and C are correct
- 3) Only C is correct
- 4) A, B, and C are correct

104. Identify the mismatched pair.

- 1) Volvox-Oogamous reproduction
- 2) Chlamydomonas-Cup-shaped chloroplast
- 3) Fucus-Post-fertilization development
- 4) Sargassum-Pyriform gametes

105. Assertion (A) : Exine of a pollen grain is made up of sporopollenin which is resistant to high temperature, strong acid or alkali as well as enzymatic degradation.

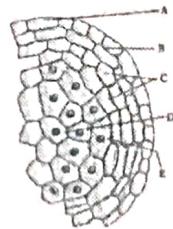
Reason (R) : Sporopollenin is absent in the region of germpores.

- 1) (A) and (R) are true and the (R) is the correct explanation of the (A).
- 2) (A) and (R) are true but the (R) is not the correct explanation of the (A).
- 3) (A) is true but (R) is false
- 4) (A) and (R) are false

106. Which of the following statements about sporopollenin is false?

- 1) Exine is made up of sporopollenin
- 2) Sporopollenin is most resistant organic material
- 3) Exine has apertures called germpores where sporopollenin is present
- 4) Sporopollenin can withstand high temperature and strong acids

107. Identify A, B, C, D and E in the transverse section of a microsporangium.



	A	B	C	D	E
1.	Epidermis	Middle layer	Endothecium	Pollen mother cell	Tapetum
2.	Endothecium	Epidermis	Middle layer	Pollen mother cell	Tapetum
3.	Epidermis	Endothecium	Middle layer	Pollen mother cell	Tapetum
4.	Middle layer	Endothecium	Epidermis	Pollen mother cell	Tapetum

RCC SENIOR TEST SERIES 2026

**QUESTION BOOKLET VERSION : 11**



108. In bryophytes, spores are formed by A in B. Choose the correct answer from the options given below :

- |              |            |
|--------------|------------|
| A            | B          |
| 1) Meiosis   | Archegonia |
| 2) Meiosis   | Capsule    |
| 3) Mitosis   | Capsule    |
| 4) Sporangia | Mitosis    |

109. Which of the following is correct ?

- 1) In about 60% of angiosperms, pollination occur at 3-celled stage
- 2) In about 40% of angiosperms, pollination occur at 2-celled stage
- 3) Generative cell divides meiotically to form two male gametes
- 4) In about 60% of the angiosperms, pollination occur when a pollen grain atleast forms a vegetative cell and a generative cell

110. In some cereals like rice and wheat, pollen grains lose viability within \_\_\_\_\_ but in members of Rosaceae, Leguminosae and Solanaceae, pollen viability is maintained for \_\_\_\_\_.

- 1) Months, years
- 2) Years, months
- 3) Months, 30 minutes
- 4) 30 minutes, months

111. The cells of endosperm of angiosperm have 24 chromosomes. What will be the number of chromosomes in the gametes?

- 1) 8
- 2) 16
- 3) 23
- 4) 32.

**112. Sporopollenin**

- 1) Is the major component of intine
- 2) Can be degraded by few fungal origin enzymes
- 3) Is highly sensitive to increased temperature in the environment
- 4) Can withstand strong acids and alkali

113. Ploidy of endothecium, microspore mother cell, tapetum and microspore is respectively.

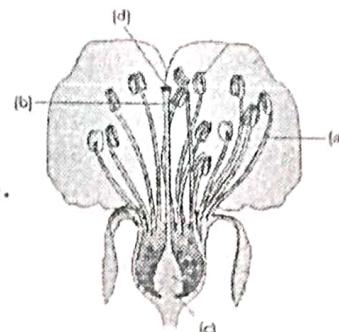
- 1) 2n, 2n, 2n n
- 2) n, n, n, 2n
- 3) 2n, n, 2n, n
- 4) n, 2n, 2n, n

114. Assertion (A) : Tapetum is the innermost layer

of anther which is single layered.

**Reason (R) :** Tapetum is polyploid and multinucleated.

- 1) (A) and (R) are true and the (R) is a correct explanation of the (A).
- 2) (A) and (R) are true but (R) is not a correct explanation of the (A).
- 3) (A) is true but the (R) is false.
- 4) (A) and (R) are false.



115.

	a	b	c	d
1)	Style	Filament	Ovary	Stigma
2)	Filament	Style	Ovary	Stigma
3)	Filament	Style	Thalamus	Anther
4)	Style	Filament	Stigma	Ovule

116. Choose incorrect statement among following:

- 1) In over 60% of angiosperm, pollen grains are shed at 3 – cell stage
- 2) In over 60% of angiosperm, pollen grains are shed at 2 – cell stage
- 3) Both (1) & (2)
- 4) In angiosperms endosperm is generally triploid

117. Assertion (A) : Pollen grain of angiosperm is considered as the male gametophyte.

**Reason (R) :** Pollen grain contains stigma, style and ovary.

- 1) (A) & (R) are true and (R) is explanation of (A).
- 2) (A) & (R) are true, but (R) is not the correct explanation of (A)
- 3) (A) is true, but (R) is false
- 4) (A) is false, but (R) is true

**QUESTION BOOKLET VERSION : 11**

**118. Assertion :** In Western countries, a large number of pollen products in the form of tablets and syrups are available.

**Reason :** Pollen grains are rich in nutrients and are used as food supplement.

- 1) If both assertion and reason are true and the reason is the correct explanation of the assertion.

- 2) If both assertion and reason are true, but reason is not the correct explanation of the assertion.

- 3) If assertion is true, but reason is false.

- 4) If both assertion and reason are false.

**119. Consider the following statements and state them true (T) or false (F)**

A. Each cell of sporogenous tissue in microsporangium act as potential pollen.

B. Dissociated microspores from tetrads on maturation are referred to as pollen grains.

C. Sporopollenin is considered non-biodegradable

- 1) A-T, B-T, C-T      2) A-F, B-T, C-T

- 3) A-F, B-F, C-T      4) A-F, B-T, C-T

**120. Which of the following plant causes pollen allergy that came to India as a contaminant with imported wheat?**

- 1) Chenopodium      2) Eichhornia

- 3) Parthenium      4) Amaranthus

**121. It is possible to store pollen grains of a large number of species for years in liquid nitrogen at**

- 1) 196°C      2) -196°C

- 3) 0°C      4) -96°C

**122. The male gametophyte of a typical angiosperm**

- a. Is surrounded by a single layered wall
- b. Is well protected by sporopollenin
- c. Is mostly three-celled at the time of dispersal
- d. Can be stored in liquid nitrogen for future use

- 1) Only a is incorrect

- 2) Only a, b, and d are correct

- 3) Only b and d are correct

- 4) Only a, b and c are correct

**123. Identify the layer of anther wall, on the basis of following features.**

i. Nourishes developing pollen grains

ii. Cells are polyploid in nature

- 1) Epidermis      2) Endothecium

- 3) Middle layers      4) Tapetum

**124. Cryopreservation is the**

- 1) Storage of pollen grains in dry ice

- 2) Fossilization of pollen grains

- 3) Storage of pollen grains in liquid nitrogen at high temperature

- 4) Low temperature storage of pollen grain in liquid nitrogen at -196°C

**125. Pollen germination can be studied by dusting pollen on a glass slide containing a drop of sugar solution**

- 1) About 10%      2) About 25%

- 3) About 80%      4) About 2%

**126. Calculate no of pollen grains produced from an another if 1 microsporangium has 50 MMC**

- 1) 600      2) 700

- 3) 750      4) None of these

**127. Calculate number of anther required to produce 96 pollengrains if 1 microsporangium has 4 MMC**

- 1) 1      2) 2

- 3) 3      4) 4

**128. Calcualte number of mitosis required to produced 90 P. G. fully developed**

- 1) 160      2) 180

- 2) 190      4) 200

**129. Calcualte no of meiosis & mitosis required to produce 2 pollen grains**

- 1) 2,4      2) 4,2

- 3) 2,2      4) None

**130. Calcualte no of MMC required to produce 96 PG if the plant belongs to cypraceae family**

- 1) 90      2) 96

- 3) 24      4) 48

**131. Calcualte number of pollen grain produced from 3 anther if one microsporangium has 20 MMC**

- 1) 900      2) 240

- 3) 320      4) 960

132. Calculate number of microper tetrad produced from 20 MMC

- 1) 60                    2) 20
- 3) 40                    4) 60

133. Calculate Maximum number of male gamete can be produced from 30 P. G.

- 1) 120                    2) 160
- 3) 100                    4) None

134. calculate no of anther required to produce 1000 P. G. If one microsporangium has 50 MMC and plant is Wolfia

- 1) 2                      2) 4
- 3) 6                      4) None

135. Calculate number of microspore required to produce 20 male gametes

- 1) 5                      2) 10
- 3) 15                      4) 20

139. During cardiac cycle about % of ventricular filling occurs prior to atrial contraction - % ventricular filling occurs due to atrial contraction

- 1) 50, 50                2) 70, 30
- 3) 30, 70                4) 10, 90

140. Heart is .....a... derived organ, is situated in the cavity, in between the two...c... slightly tilted to the ....d.....

- | a               | b        | c     | d     |
|-----------------|----------|-------|-------|
| 1) Endodermally | Thoracic | Lungs | Left  |
| 2) Mesodermally | Thoracic | Lungs | Left  |
| 3) Mesodermally | Thoracic | Lungs | Right |
| 4) Endodermally | Thoracic | Lungs | Right |

141. Pick up a pair of synonymous term

- 1) Plasma - Serum
- 2) Atrioventricular node - Pacemaker
- 3) Leucocytes - Lymphocytes
- 4) Mitral valve - Bicuspid valve

142. People living at sea level have around 5 million RBCs per cubic millimetre of their blood whereas those living at an altitude of 5400 metres above sea level, have around 8 million. This is because , at high altitude

- 1) People eat more nutritive food, therefore more RBCs are formed
- 2) People get pollution-free air to breath and more oxygen is available
- 3) Atmospheric O<sub>2</sub> density is less and hence more RBCs are needed to absorb the required amount of O<sub>2</sub>
- 4) There is more UV radiation which enhances RBCs production

136. Hormonal regulation of cardiac activity involves the hormones and secreted by the

- 1) Epinephrine, norepinephrine, cortex of adrenal glands
- 2) Epinephrine, norepinephrine, medulla of adrenal glands
- 3) Thyroxine, calcitonin, thyroid gland
- 4) Aldosterone, coricosterone, cortex of adrenal glands

137. Which of the following correctly explains a phase/ event in cardiac cycle in a standard electrocardiogram?

- 1) QRS complex indicates atrial contraction.
- 2) QRS complex indicates ventricular contraction.
- 3) Time between S and T represents atrial systole.
- 4) P-wave indicates beginning of ventricular contraction.

138. In a cardiac output of 5250 ml per minute with 75 heart beats per minute, the stroke volume is :

- 1) 70 ml                    2) 80 ml
- 3) 355 ML                  4) 460 ml

143. Match the Column I with Column II

- | Column I   | Column II   |
|--|---|
| a. Counting time period  | i. A detailed evaluation of the number of QRS, complex in a given ECG |
| b. Potential generated by the recovery of ventricles from the depolarization state | ii. Determination of heart beat                                       |
| c. Multiple leads are attached to the chest region                                 | iii. T-wave   |
| 1) a-i, b-ii, c-iii  | 2) a-iii, b-ii, c-i   |
| 3) a-ii, b-i, c-iii  | 4) a-ii, b-iii, c-i   |

144. In mammals, which of the following contains blood with the highest oxygen content  
 1) Right atrium      2) Jugular vein  
 3) Pulmonary artery      4) Left ventricle

145. The antibodies are-

- 1) (Gamma) - globulins
- 2) Albumins
- 3) Vitamins
- 4) Sugar

146. Majority of the plasma proteins are synthesized in

- 1) Bone marrow      2) Liver
- 3) blood      4) Spleen

147. Blood clotting involves the conversion of

- 1) prothrombin to thromboplastin
- 2) thromboplastin to prothrombin
- 3) fibrinogen to fibrin
- 4) fibrin to fibrinogen

148. Which ion participate in blood clotting of

- 1) K<sup>+</sup>
- 2) Na<sup>+</sup>
- 3) Ca<sup>2+</sup>
- 4) Cl

149. Systemic heart refers to :

- 1) entire heart in lower vertebrates
- 2) the two ventricles together in humans
- 3) left auricle and left ventricle in higher vertebrates
- 4) the heart that contracts under stimulation from nervous system

150. The opening between the right atrium and the right ventricle is guarded by a valve called x, whereas y guards the opening of the left atrium and the left ventricle :

- 1) x is bicuspid valve, y is tricuspid valve
- 2) x is semilunar valve, y is tricuspid valve
- 3) x is bicuspid valve, y is semilunar valve
- 4) x is tricuspid valve, y is bicuspid

151. Heart of Heart'

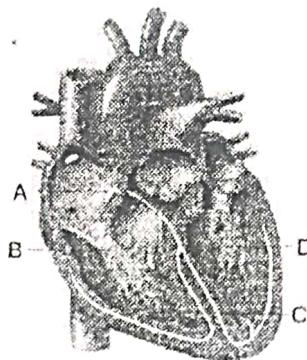
- 1) SA node      2) AV node
- 3) Bundle of His      4) Purkinje fibres.

152. The blood vessel which brings oxygenated blood from lungs towards the heart is

- 1) Pre caval      2) Post caval
- 3) Pulmonary vein      4) Pulmonary artery

PCB TEST

153. Label the diagram.



- 1) A → Atrio ventricular node, B → Chordae Tendinae, C → Bundle of His, D → Inter ventricular Septum
- 2) A → Atrio ventricular node, B → Inter ventricular Septum, C → Chordae Tendinae, D → Bundle of His
- 3) A → Chordae Tendinae, B → Atrio ventricular node, C → Inter ventricular Septum, D → Bundle of His
- 4) A → Atrio ventricular node, B → Chordae Tendinae, C → Inter ventricular Septum, D → Bundle of His

154. QRS complex of ECG represents -

- 1) Depolarisation of the atria which initiates the atrial contraction
- 2) Depolarisation of the ventricles, which initiates the ventricular contraction
- 3) Repolarisation of the ventricles which initiates the ventricular contraction
- 4) Repolarisation of the ventricles which initiates the ventricular relaxation contraction

155. Match the column :

Column I

- |                       |  |
|-----------------------|--|
| a. Superior Vena Cava | i. Carries deoxygenated blood to lungs                                   |
| b. Inferior Vena Cava | ii. Carries oxygenated blood from lungs to left atrium                   |
| c. Pulmonary Artery   | iii. Brings deoxygenated blood from lower parts of body to right atrium  |
| d. Pulmonary Vein     | iv. Brings deoxygenated blood from upper parts of body into right atrium |
- 1) a-i, b-ii, c-iii, d-iv  
 2) a-iii, b-ii, c-iv, d-i  
 3) a-iv, b-iii, c-i, d-ii  
 4) a-ii, b-iv, c-iii, d-i

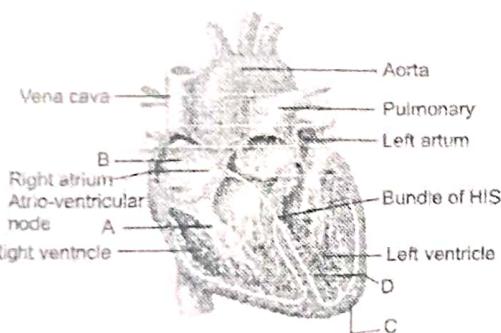
156. The volume of blood pumped out by ventricle during each beat is known as **stroke volume**. If a healthy adult has a heart rate of 72 and stroke volume of 70 ml, then the cardiac output is.
- 70 ml/min.
  - 72 ml/min
  - 5040 ml/min
  - 140 ml/min

## 157. Duration of a cardiac cycle :

- 0.8 seconds
- 1.2 seconds
- 1.8 seconds
- 2.0 seconds

## 158. The following statements and select the correct ones.

- i) Nodal tissue is specialized cardiac musculature in human heart which has the ability to generate action potential due to an external stimuli
  - ii) Position of SAN - right corner of right atrium
  - iii) Position of AVN - right corner of ventricle.
  - iv) Purkinje fibres are modified cardiac muscle fibres that originate from the bundle of His and spread into the two ventricles
- (i) and (ii)
  - (i) and (iii)
  - (ii) and (iv)
  - All of these



159.

- Which of the following is incorrect matching:
- A - Chordae Tendinae - It joins papillary muscle to AV valves
  - C - Apex - formed by left ventricle only.
  - B - SA node - it generates impulse with lesser speed than AV node.
  - D - interventricular septum

## 160. In human heart valves occur in between

- Pulmonary veins and left atrium
  - Right ventricle and pulmonary artery ✓
  - Left ventricle and aorta ✓
  - Right atrium and left atrium
- a, b, c
  - b, c
  - b, c, d
  - a, b, c, d

## 161. Match the Column-I with Column-II

Column-I	Column-II
a) P-wave ✓	i) Depolarisation of ventricles
b) QRS complex ✓	ii) Repolarisation of ventricles
c) T-wave	iii) Coronary ischemia
d) Reduction in the surface area of lumen	iv) Depolarisation of atria size of T- wave
	v) Depolarisation of atria

Select the correct option :

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

## 162. All the components of the nodal tissue are autoexcitable. Why does the SA node act as the normal pacemaker?

- SA node has the lowest rate of depolarisation.
- SA node is the only component to generate the threshold potential.
- Only SA node can convey the action potential to the other components.
- SA node has the highest rate of depolarisation.

## 163. Match the following columns and select the correct option.

Column-I	Column-II
a) Eosinophils	i) immune response
b) Basophils	ii) Phagocytosis
c) Neutrophils	iii) Release histaminase, destructive enzymes
d) Lymphocytes	iv) Release granules containing histamine

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

## 164. Which of the following conditions cause erythroblastosis foetalis?

- Mother Rh+ve and foetus Rh-ve
- Mother Rh-ve and foetus Rh+ve
- Both mother and foetus Rh-ve
- Both mother and foetus Rh-ve

## 165. Which enzyme is responsible for the conversion of inactive fibrinogens to fibrins?

- Renin
- Epinephrine
- Thrombokinase
- Thrombin

**166.** Persons with 'AB' blood group are called as "Universal recipients". This is due to:

- 1) Absence of antigen A and B in plasma
- 2) Presence of antibodies, anti-A and anti-B and anti-B in RBCs
- 3) Absence of antibodies, anti-A and anti-B, in plasma
- 4) Absence of antigens A and B on the surface of RBCs

**170.** ECG is a graphical representation of the electrical activity of the heart during a cardiac cycle. Read following statements.

- i) Electrocardiograph machine is used to obtain an electrocardiogram (ECG). ✓
- ii) To obtain a standard ECG, a patient is connected to the machine with three electrical leads one to each wrist and to the left ankle. ✓
- iii) For a detailed evaluation of the heart's function, multiple leads are attached to the chest region. ✓
- iv) The P wave represents the repolarisation of the atria, which leads to the contraction of both the atria.
- v) The QRS complex represents the depolarisation of the ventricles, which initiates the ventricular contraction.
- vi) The T wave represents the return of the ventricles from excited to normal state.

Which of the following option contain write statements ?

- 1) (i), (ii), (iv), (v) and (vi)
- 2) (i), (ii), (iii), (v) and (vi)
- 3) (iii), (iv) and (vi)
- 4) (i), (ii), (iii), (iv), (v) and (vi)

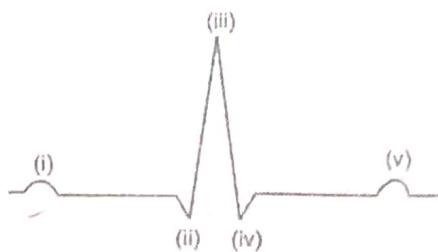
**168.** Which one of the following statements is correct?

- 1) Blood moves freely from atrium to the ventricle during joint diastole.
- 2) Increased ventricular pressure causes closing of the semilunar valves.
- 3) The atrio-ventricular node (AVN) generates an action potential to stimulate atrial contraction
- 4) The tricuspid and the bicuspid valves open due to the pressure exerted by simultaneous contraction of the atria.

**171.** Select correct statement regarding to blood clotting.

- |                 |                   |
|-----------------|-------------------|
| i) Prothrombin  | ii) Thrombokinase |
| iii) Fibrinogen | iv) Thrombin      |
| v) Fibrin       | vi) Clot          |
- 1) (ii) acts on (iii) and forms (iv)
  - 2) (i) acts on (ii) and forms (iv)
  - 3) (iv) acts on (iii) and forms (v)
  - 4) (iii) acts on (i) and forms (iv)

**172.** (i), (ii), (iii), (iv) and (v) label different waves of standard ECG tracing. Which of the following wave correctly represents depolarisation of atria :



- 1) (i) only
- 2) (i) and (ii)
- 3) (i) and (iv)
- 4) (ii), (iii) and (iv)

**169.** Match List-I with List - II.

Column-I                    Column-II

- |                |             |
|----------------|-------------|
| a) Eosinophils | i) 6-8%     |
| b) Lymphocytes | ii) 2-3%    |
| c) Neutrophils | iii) 20-25% |
| d) Monocytes   | iv) 60-65%  |

Choose the correct answer from the options given below :

- 1) a-iv, b-i, c-ii, d-iii
- 2) a-iv, b-i, c-iii, d-ii
- 3) a-ii, b-iii, c-iv, d-i
- 4) a-ii, b-iii, c-i, d-i

## QUESTION BOOKLET VERSION : 11

173. Which among the followings is correct during each cardiac cycle?

- 1) The volume of blood pumped out by the Rt and Lt ventricles is same.
- 2) The volume of blood pumped out by the Rt and Lt ventricles is different.
- 3) The volume of blood received by each atrium is different.
- 4) The volume of blood received by the aorta and pulmonary artery is different.

174. Cardiac activity could be moderated by the autonomous neural system. Tick the correct answer :

- 1) The parasympathetic system stimulates heart rate and stroke volume
- 2) The sympathetic system stimulates heart rate and stroke volume
- 3) The parasympathetic system decreases the heart rate but increase stroke volume
- 4) The sympathetic system decreases the heart rate but increase stroke volume

175. Match the terms given under Column I with their functions given under Column II and select the answer from the options given below :

Column I	Column II
A) Lymphatic system	(i) Carries oxygenated blood
B) Pulmonary vein	(ii) Immune response
C) Thrombocytes	(iii) To drain back the tissue fluid to the circulatory system
D) Lymphocytes	(iv) Coagulation of blood

1) (A)-(ii), (B)-(i), (C)-(iii), (D)-(iv)  
 2) (A)-(iii), (B)-(i), (C)-(iv), (D)-(ii)  
 3) (A)-(iii), (B)-(i), (C)-(iii), (D)-(iv)  
 4) (A)-(ii), (B)-(i), (C)-(iii), (D)-(iv).

176. Match List I with List II.

Column-I	Column-II
a) P-wave	i) Beginning of systole
b) Q-wave	ii) Repolarisation of ventricles
c) QRS complex ventricles	iii) Depolarisation of atria

d) T wave

iv) Depolarisation of ventricles

Choose the correct answer from the options given below :

- 1) a-iv, b-iii, c-ii, d-i
- 2) a-ii, b-iv, c-i, d-iii
- 3) a-i, b-ii, c-iii, d-iv
- 4) a-iii, b-i, c-iv, d-ii

177. Which of the following carries blood rich in food materials, such as glucose and amino acids, from intestine to liver?

- 1) Dorsal aorta
- 2) Mesenteric artery
- 3) Renal portal vein
- 4) Hepatic portal vein

178. P wave of ECG occurs before the :

- 1) Onset of ventricular contraction
- 2) End of arterial contraction
- 3) Beginning of atrial contraction
- 4) All of the above

179. A portal system is that in which :

- 1) A vein begins from an organ and ends in heart
- 2) An artery breaks up in an organ and restarts by the union of its capillaries
- 3) The blood from gut is brought into kidneys before it is poured into heart
- 4) A vein breaks up in an organ into capillaries and restarts by their union as a new vein in the same organ

180. Match the contents of column-I with those of column-II :

Column-I	Column-II
i. Semilunar valves of Aortas	a. 1
ii. Tricuspid valves	b. 2
iii. Bicuspid valves	c. 3
iv. Fossa ovalis	d. 3 pair
• 1) a-d, ii-c, iii-b, iv-a	2) i-c, ii-d, iii-b, iv-a
3) i-c, ii-d, iii-a, iv-b	4) i-d, ii-c, iii-a, iv-b



## Answer Key - Repeater PCB

PCB Test (Solution)

Date : 13-07-2025

Physics			Chemistry				Biology		
01. 1	19. 4	37. 1	55. 1	73. 1	91 3	109.4	127.2	145.1	163 4
02. 4	20. 2	38. 4	56. 2	74. 1	92 3	110.4	128.2	146.2	164 2
03. 3	21. 4	39. 2	57. 3	75. 2	93 3	111.1	129.4	147.3	165 4
04. 4	22. 3	40. 3	58. 1	76. 4	94 2	112.4	130.2	148.3	166 3
05. 3	23. 3	41. 1	59. 4	77. 2	95 1	113.1	131.4	149.3	167 2
06. 1	24. 3	42. 2	60. 2	78. 2	96 1	114.2	132.2	150.4	168 1
07. 3	25. 2	43. 2	61. 3	79. 4	97 2	115.2	133.4	151 1	169 3
08. 1	26. 1	44. 2	62. 4	80. 2	98 1	116.1	134.4	152 3	170 2
09. 1	27. 4	45. 2	63. 1	81. 1	99 4	117.3	135.2	153 4	171 3
10. 1	28. 1	46. 2	64. 1	82. 3	100 2	118.1	136.2	154 2	172 1
11. 1	29. 4	47. 4	65. 2	83. 3	101.1	119.1	137.2	155 3	173 1
12. 4	30. 4	48. 2	66. 3	84. 2	102.3	120.3	138.1	156 3	174 2
13. 2	31. 2	49. 4	67. 3	85. 3	103.2	121.2	139.2	157 1	175 2
14. 3	32. 2	50. 3	68. 1	86. 1	104.3	122.3	140.2	158 3	176 4
15. 1	33. 1	51. 1	69. 3	87. 1	105.2	123.4	141.4	159 3	177 4
16. 3	34. 2	52. 3	70. 4	88. 2	106.3	124.4	142.3	160 2	178 3
17. 2	35. 1	53. 3	71. 3	89. 1	107.3	125.1	143.4	161 2	179 4
18. 4	36. 4	54. 2	72. 1	90. 4	108.2	126.4	144.4	162 4	180 1