SANMATI H.S.SCHOOL
SUMMER ASSIGNMENT
CLASS-XII
SUBJECT: ENGLISH

General Instructions:
The assignment is mandatory for all students.
Submit it in a neatly maintained notebook/file.
Ensure originality in answers. Avoid copying.
Make the work creative and presentable with proper headings.

1.Read the passage given below and answer the questions that follow:

1. While there is no denying that the world loves a winner, it is important that you recognize the signs, of stress in your behaviour and be healthy enough to enjoy your success. Stress can strike anytime, in a fashion that may leave you unaware of its presence in your life. While a certain amount of pressure is necessary for performance, it is important to be able to recognize your individual limit. For instance, there are some individuals who accept competition in a healthy fashion. There are others who collapse into weeping wrecks before an exam or on comparing marks sheets and finding that their friend has scored better.

2. Stress is a body reaction to any demands or changes in its internal and external environment. Whenever there is a change in the external environment such as temperature, pollutants, humidity and working conditions, it leads to stress. In these days of competition when a person makes up his mind to surpass what has been achieved by others, leading to an imbalance between demands and resources, it causes psychosocial stress. It is a part and parcel of everyday life.

3. Stress has a different meaning, depending on the stage of life you are in. The loss of a toy or a reprimand from the parents might create a stress shock in a child. An adolescent who fails an examination may feel as if everything has been lost and life has no further meaning. In an adult the loss of his or her companion, job or professional failure may appear as if there is nothing more to be achieved.

4. Such signs appear in the attitude and behaviour of the individual, as muscle tension in various parts of the body, palpitation and high blood pressure, indigestion and hyperacidity. Ultimately the result is self-destructive behaviour such as eating and drinking too much, smoking excessively, relying on tranquilisers. There are other signs of stress such as trembling, shaking, nervous blinking, dryness of throat and mouth and difficulty in swallowing.

5. The professional under stress behaves as if he is a perfectionist. It leads to depression, lethargy and weakness. Periodic mood shifts also indicate the stress status of the students, executives and professionals.

6. In a study sponsored by World Health Organization and carried out by Harvard School of Public Health, the global burden of diseases and injury indicated that stress diseases and accidents are going to be the major killers in 2020.

7. The heart disease and depression both stress diseases are going to rank first and second in 2020. Road traffic accidents are going to be the third-largest killers. These accidents are also an indicator of psychosocial stress in a fast-moving society. Other stress diseases like ulcers, hypertension and sleeplessness have assumed epidemic proportions in modern societies.

8. A person under stress reacts in different ways and the common ones are flight, fight and flee depending upon the nature of the stress and capabilities of the person. The three responses can be elegantly chosen to cope with the stress so that stress does not damage the system and become distressed.

9. When stress crosses the limit, peculiar to an individual, it lowers his performance capacity. Frequent crossings of the limit may result in chronic fatigue in which a person feels lethargic, disinterested and is not easily motivated to achieve anything. This may make the person mentally undecided, confused and accident-prone as well. Sudden exposure of unnerving stress may also result in a loss of memory. Diet, massage, food supplements, herbal medicines, hobbies, relaxation techniques and dance movements are excellent stress busters.

(i) What is stress? What factors lead to stress? 2
(ii) What are the signs by which a person can know that he is under stress? 2
(iii) What are the different diseases a person gets due to stress? 2
(iv) Give any two examples of stress busters. 1
(v) How does a person react under stress? 2

2.Prepare a project on any one topic not more than 10 pages:

Women Empowerment in Modern India
Climate Change and Its Impact
Role of Technology in Education
Headings:
Cover page
Acknowledgement
Content (with pictures/newspaper cuttings)
Conclusion
Bibliography

2. Prepare a 2-minute speech on any one topic:

Dreams vs Reality
Importance of Communication Skills.

3. Read any one novel (e.g., The Alchemist) and write a short review (100 Words)

4. Write a conversation between:

Two friends discussing their future plans after school

सन्मति उच्चतर माध्यमिक विद्यालय, इंदौर

कक्षा 12वीं – ग्रीष्मकालीन गृह कार्य

अति लघु उत्तरीय प्रश्न:

1. ‘आत्मपरिचय’ के लेखक कौन हैं?

2. ‘दिन जल्दी-जल्दी ढलता है’ पंक्ति किस ओर संकेत करती है?

3. ‘भक्तिन’ पाठ पूर्वकक्षा के किस पाठ से मेल खाता है? संक्षेप में लिखिए।

दीर्घ उत्तरीय प्रश्न:

1. ‘बच्चे नीड़ से झाँक रहे होंगे’ कविता की इस पंक्ति का अर्थ अपने विचारों के अनुसार लिखिए।

2. यदि आप स्वयं लेखक/लेखिका होते, तो अपना आत्मपरिचय किस प्रकार लिखते? लगभग छह पंक्तियों में लिखिए।

3. हरिवंश राय बच्चन का संक्षिप्त जीवन परिचय चित्र सहित प्रस्तुत कीजिए।

4. वर्तमान समय में प्रचलित किसी दो प्रसिद्ध पत्रिकाओं के बारे में जानकारी एकत्र कर एक संक्षिप्त रिपोर्ट तैयार कीजिए।

SANMATI H. SEC. SCHOOL, INDORE

SUMMER ASSIGNMENT-2026-27

CHAPTER : INVERSE TRIGONOMETRIC FUNCTIONS

SUBJECT: MATHEMATICS **CLASS : XII**

General Instructions:

(i). Assignment must be done in assignment copy only.
(ii) Step by step solution must be done in copy.
(iii) Assignment Submission last date is 19-o6-26.
(iv) Assignment copy must be covered and labled.

SECTION – A

Questions 1 to 10 carry 1 mark each.

1. The value of $\tan^{-1}(\sqrt{3}) + \cos^{-1}\left(-\frac{1}{2}\right)$ corresponding to principal branches is

(a) $-\frac{\pi}{12}$ (b) 0 (c) π (d) $\frac{\pi}{3}$

2. The value of $\sin^{-1}\left(\cos\frac{\pi}{9}\right)$ is

(a) $\frac{\pi}{9}$ (b) $\frac{5\pi}{9}$ (c) $\frac{-5\pi}{9}$ (d) $\frac{7\pi}{18}$

3. The domain of the function defined by $\sin^{-1}\sqrt{x-1}$ is

(a) [1, 2] (b) [–1, 1] (c) [0, 1] (d) none of these

4. The value of $\tan^2(\sec^{-1}2) + \cot^2(\text{cosec}^{-1}3)$ is

(a) 5 (b) 11 (c) 13 (d) 15

5. The value of $\tan^{-1}\left(\sin^{-1}\frac{3}{5} + \tan^{-1}\frac{3}{4}\right)$ is

(a) $\frac{7}{24}$ (b) $\frac{24}{7}$ (c) $\frac{3}{2}$ (d) $\frac{3}{4}$

6. If $\alpha \le 2\sin^{-1}x + \cos^{-1}x \le \beta$, then

(a) $\alpha = \frac{-\pi}{2}, \beta = \frac{\pi}{2}$ (b) $\alpha = 0, \beta = \pi$ (c) $\alpha = \frac{-\pi}{2}, \beta = \frac{3\pi}{2}$ (d) $\alpha = 0, \beta = 2\pi$

7. If $\sin^{-1}x + \sin^{-1}y = \frac{\pi}{2}$, then the value of $\cos^{-1}x + \cos^{-1}y$ is

(a) $\frac{\pi}{2}$ (b) 0 (c) π (d) $\frac{2\pi}{3}$

8. If $3\tan^{-1}x + \cot^{-1}x = \pi$, then x equals

(a) 0 (b) 1 (c) –1 (d) 1/2

For Q9 and Q10, a statement of assertion (A) is followed by a statement of reason (R). Choose the correct answer out of the following choices.

(a) Both A and R are true and R is the correct explanation of A.
(b) Both A and R are true but R is not the correct explanation of A.
(c) A is true but R is false.
(d) A is false but R is true.

9. Assertion (A): Range of $\cot^{-1} x$ is $(0, \pi)$
Reason (R): Domain of $\tan^{-1} x$ is R.

10. Assertion (A): Principal value of $\tan^{-1}(-\sqrt{3})$ is $\frac{\pi}{3}$.
Reason (R): $\tan^{-1}$: IR$\rightarrow \left(-\frac{\pi}{2}, \frac{\pi}{2}\right)$ so for any x ϵ IR, $\tan^{-1}(x)$ represents an angle in $\left(-\frac{\pi}{2}, \frac{\pi}{2}\right)$

SECTION – B

Questions 11 to 14 carry 2 marks each.

11. Find the value of $\sin^{-1}\left(\cos\left(\frac{33\pi}{5}\right)\right)$

12. Find the domain of $\sin^{-1}(x^2 - 4)$

13. Find the value of $\sin^{-1}\left(\sin\left(\frac{13\pi}{7}\right)\right)$

14. Find the value of $\cos^{-1}\left(\cos\frac{7\pi}{6}\right)$.

SECTION – C

Questions 15 to 17 carry 3 marks each.

15. Find the values of $\tan^{-1}(1) + \cos^{-1}\left(-\frac{1}{2}\right) + \sin^{-1}\left(-\frac{1}{2}\right)$

16. Prove that $\tan^{-1}\left(\frac{\sqrt{1+x}-\sqrt{1-x}}{\sqrt{1+x}+\sqrt{1-x}}\right) = \frac{\pi}{4} - \frac{1}{2}\cos^{-1} x$

17. Express $\tan^{-1}\left(\frac{\cos x}{1-\sin x}\right), -\frac{\pi}{2} < x < \frac{\pi}{2}$ in the simplest form.

SECTION – D

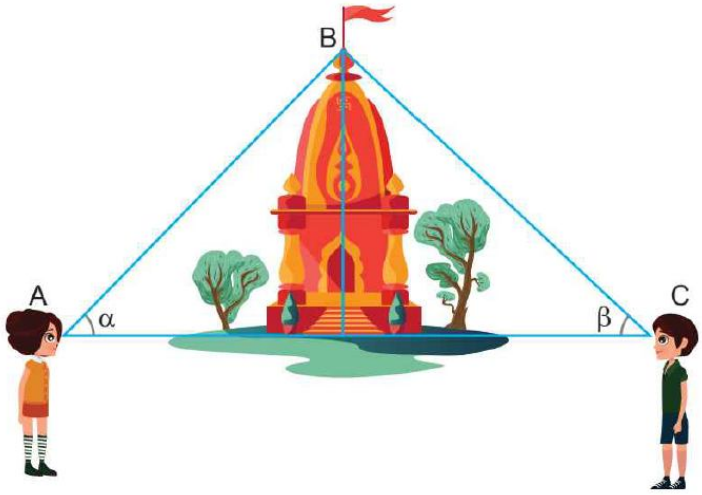
Questions 18 carry 5 marks.

18. Prove that $\cot^{-1}\left(\frac{\sqrt{1+\sin x}+\sqrt{1-\sin x}}{\sqrt{1+\sin x}-\sqrt{1-\sin x}}\right) = \frac{x}{2}, x \in \left(0, \frac{\pi}{4}\right)$

SECTION – E (Case Study Based Questions)

Questions 19 to 20 carry 4 marks each.

19. Two men on either side of a temple of 30 metres high from the level of eye observe its top at the angles of elevation α and β respectively. (as shown in the below figure). The distance between the two men is $40\sqrt{3}$ metres and the distance between the first person A and the temple is $30\sqrt{3}$ metres.

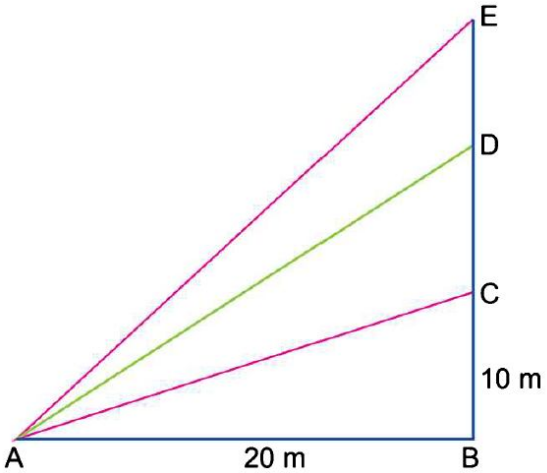


Based on the above information answer the following:

(i) Find the measure of ∠CAB in terms of $\sin^{-1}$ and $\cos^{-1}$.

(ii) Find the measure of ∠ABC.

20. The Government of India is planning to fix a hoarding board at the face of a building on the road of a busy market for awareness on COVID-19 protocol. Ram, Robert and Rahim are the three engineers who are working on this project. "A" is considered to be a person viewing the hoarding board 20 metres away from the building, standing at the edge of a pathway nearby. Ram, Robert and Rahim suggested to the firm to place the hoarding board at three different locations namely C, D and E. "C" is at the height of 10 metres from the ground level. For the viewer A, the angle of elevation of "D" is double the angle of elevation of "C" The angle of elevation of "E" is triple the angle of elevation of "C" for the same viewer. Look at the figure given and based on the above information answer the following:



Based on the above information, answer the following questions:

(i) Find the measure of ∠DAB

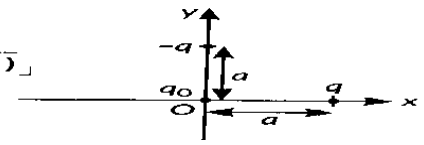
(ii) Find the measure of ∠EAB

SUMMER ASSIGNMENTS
SESSION 2026 -27
CLASS XII
SUBJECT: PHYSICS (042)

Multiple choice questions:

Q.1) Three charges q, -q, and q_0 are placed are placed is shown in diagram. The magnitude of net force on charge q_0 at point O is

$\left[k = \frac{1}{(4\pi\varepsilon_0)}\right]$



a) 0 b) $2Kqq_0/a^2$ c) $2Kqq_0/a$ d) None

Q.1) An electric dipole consisting of charges q and -q separated by a distance L is in stable equilibrium in uniform electric field. The electrostatic potential energy off dipole is

a) qLE b) Zero c) -qLE d) **-2**qLE

Q.2) If the net electric flux through a close surface is zero, then we can infer

a) No net charge is enclosed by the surface b) Uniform electric field exist within the surface
c) Electrical potential varies inside the surface d) Charge is present inside the surface

Q.3) A force of 4N is acting between two charges in air. If the space between them is completely filled with glass (relative permittivity = 8), then the new force will be

(a) 2N (b) 5N (c) 0.5N (d) 0.2N

Q.4) A charge q is placed at the center of the line joining two equal charges Q. The system of three charges will be in equilibrium if q is equal to

(a) –Q/2 (b) –Q/4 (c)Q/2 (d) Q/4

Q.5) Two point charges Q and -3Q are placed some distance apart. If the electric field at the location of Q is E, the field at the location of -3Q is

(a) E (b) -E (c) E/3 (d) -E/3

Q.6) An electric dipole when placed in a uniform electric field will have minimum potential energy, if the angle between dipole moment and electric field is

(a) Zero (b) π/ 2 (c) π/3 (d) π

Q.7) which statement is true for gauss law?

(a) All the charge whether inside or outside the Gaussian surface contributed to the electric flux.

(b) Electric flux depends upon the geometry of the Gaussian surface.

(c) Gauss theorem can be applied to non-uniform electric field.

(d) The electric field over the Gaussian surface remains continuous and uniform at every.

Q.8) An electric dipole placed in a non-uniform electric field can experience

(a) a force but not a torque. (b) a torque but not a force.

(c) always a force and a torque (d) neither a force nor a torque.

Q.9) In an experiments three microscopic latex spheres are sprayed into a chamber and become charged with charges +3e, +5e, and -3e respectively. All the three spheres came in contact simultaneously for a moment and got separated. Which one of the following are possible value for the final charge on the spheres?

(a) + 5e, - 4e, + 5e (b) + 6e, +6e, -7e

(c) -4e, + 3.5e, +5.5e (d) + 5e, -8e, +7e

Q.10) Three charges 2q, -q and –q lie at the vertices of a triangle. The value of E and V at centroid of triangle will be

(a) $E \neq 0$ and $V \neq 0$ (b) $E = 0$ and $V = 0$

(c) $E \neq 0$ and $V = 0$ (d) $E = 0$ and $V \neq 0$

Very short answer type

Q.11) Consider a uniform electric field 3×10^3 i N/C. calculate the flux of this field through a square surface of area 10 cm^2 when

(i) Its plane is parallel to the y-z plane

(ii) The normal to its plane makes a 60^o angle with the x axis.

Q.12) Define potential difference .How is it related to work. Calculate the work done carrying an α-particle across a potential difference of one volt.

Q.13) . A charge of 24μC is given to a hollow metallic sphere of radius 0.2 m. find the potential

a. At the surface of the sphere
b. At a distance 0.1cm from the centre of the sphere
c. At the centre of the sphere.

Q.14) Derive the expression for electrostatic potential due to dipole .Hence, find the value of potential on axial and equatorial line of dipole

Q.15) The sum of two point charges is 9 μc .They repel each other is force of 2 N. When kept 30 cm apart in free space. Calculate the value of each charge.

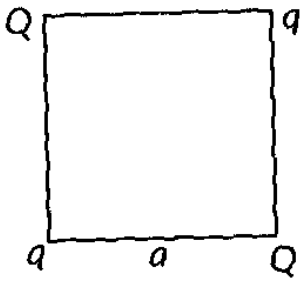
Q.16) An electric dipole with dipole moment 4×10^{-9}Cm is aligned at $30^o$with the direction of a uniform electric field of magnitude 5×10^4N/C. Calculate the magnitude of the torque acting on the dipole

Q.17) Two charges 5×10^{-8}c and -3×10^{-8}C are located 16cm apart. At what points on the line joining the two charges is the electric potential zero?

Q.18) Derive the formula for electric field of an electric dipole for the following two cases(a) axial line (b) equatorial line.

Long Answer type questions:

Q.19) (a) Four point charges Q, q, Q and q are place at the corners of a square of side a Units as shown in figure



Find resulting electric force on a charge Q.

Q.20) Two charged conducting spheres of radii a and b are connected to each other by a wire. Find the ratio of the electric fields at their surfaces.

Q.21) A spherical Gaussian surface encloses a positive charge q. Find net electric flux through the surface. Explain with a reason what happens to the net electric flux through the Gaussian surface if:

(a) the charge is tripled.
(b) the volume of the sphere is tripled.
(c) the shape of the Gaussian surface is changed into a cuboid.
(d) the charge is moved into another location inside the Gaussian surface.

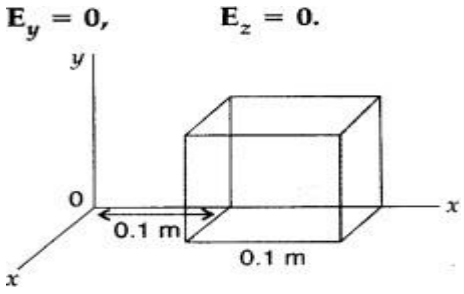
Q.22) State Gauss's law in electrostatic. Use this law to derive an expression for the electric field due to a uniformly charged infinite plane sheet having uniform charge density $+\sigma$. Obtain the expression for the amount of work done in bringing a point charge q from infinity to a point, distance r, in front of the charge sheet.

Q.23) (a)Define electric flux. Write its SI units.

(b) The electric field components due to a charge inside the cube of side 0.1 m are as shown : $E_x = ax$, where $\alpha =$ 500 N/C^{-m}

Calculate

(i) the flux through the cube, and the charge inside the cube



SANMATI HIGHER SECONDARY SCHOOL
SUMMER ASSIGNMENT 2026-27
CLASS–XII
SUBJECT –CHEMISTRY(043)

SECTION – A

Multiple choice questions

1. The unit of molality is **1**

a) mol L^{-1} b)mol

b) mol Kg^{-1} d)None of them.

2. The equation relating temperature and rate of reaction was given by **1**

a) Arhenius b)Dalton.

c)Plank d)None of them.

3. The electrode at which the process of Oxidation takes place is called **1**

a) Cathode b)Anode

b) Oxidising agent. d)None of them.

4. The time required to complete haif of the reaction is called **1**

a) Reduced time. b)Half life.

b) Fifty percent time. d)All of them.

5. Half life of first order reaction is **1**

a) Depend on initial concentration. b)Independent of initial concentration.

b) May depend or may not depend. d)None of them.

6. The number of moles in a litre of solution is **1**

a) Molarity b) Molality

c) Both d) None of them.

7. The number of moles in a KG of solvent is **1**

a) Molarity b) Molality

c) Mole fraction d) None of above.

8. When 22 Grams of Salt dissolved in 180 Grams of Water then the solvent is **1**

a) Salt b) Water

c) Both d) None of the above.

9. An Non ideal Solution is **1**

a) Mixture of Heptane & Hexane b) Mixture of Hexane and Propane .

c) Mixture of Ethanol & Water d) None of them.

10. Iron shows valency of **1**

a) 1 b) 4

c) 3 d) None of them.

Questions 11 To 15

A) Both assertion and reason are correct and reason is correct explanation of it
B) Both assertion and reason are correct and reason is not correct explanation of it
C) Assertion is correct but reason is wrong.
D) Assertion is wrong and reason is correct.

11. Assertion : D Block Elements are good Catalysts. **1**

Reason : They Show variable valency.

12. Assertion : Van't Hoff factor corrected the colligative properties. **1**

Reason : Colligative properties are not correct .

13. Assertion : SHE has zero Electrode potential. **1**

Reason : We consider it .

14. Assertion : Salt bridge is placed between two half cellsa . **1**

Reason :It maintains the electrical neutrality of the cell.

15. Assertion : Osmotic pressure is a colligative property. **1**

Reason : It deends on the number of solute particles .

Answer the following questions in one word or in one sentence.

16. Name the colligative property of solution involving Osmosis. **1**

SECTION B

Answer the following questions

17. State Henry's Law. Give its application. **2**

OR

State Raoult's Law.

18. What is SHE ? Explain in short . **2**

OR

What is Electrochemical cell ?

19. What is rate of reaction in the terms reactants and products ? Explain with examples. **2**

20. What is difference between Primary Battery and Secondary Battery ? **2**

21. What are the units of Rate constant for zero order and First order reactions ? **2**

SECTION – C

Answer the following questions

22. Calculate the Molarity of the Solution containing 20 grams NaOH in 2500 ml solution. **3**

23. What is Pseudo-first Order reaction ? Give example. **3**

24. Calculate the freezing point of a solution containing 5 Grams of Potassium Chloride having Molecular Mass 74.5 amu dissolved in 100 Grams of Water. **3**

K_f of water is 1.86 K kg/ mol.

OR

For the reaction R--P, the concentration of a reactant changes from 0.03M to 0.02M in 25 minutes. Calculate the average rate of reaction using units of time both in minutes and seconds

25. Give differences between order and Molecularity of the reaction **3**

OR

Explain various types of Chemical reactions .

26. The electrical resistance of a column of 0.05 mol L^{-1} NaOH solution of diameter 1 cm and length 50 cm is 5.55×10^3 ohm. Calculate its resistivity, conductivity and molar conductivity. **3**

OR

The conductivity of 0.001028 mol L^{-1} acetic acid is 4.95 × 10–5 S cm^{-1}. Calculate its dissociation constant if molar conductivity at infinite dilution i for acetic acid is 390.5 S cm^2 mol^{-1}

27. What are Colligative properties ? Explain them with examples . **3**

28. Why D Block Elements act as Catalysts ? **3**

OR

What is Nernst Equation ?

SECTION – D

Read the given passages and answer the following questions. Case based questions.

29. Secondry Cells can be reused again and again ,for example Lead Storage battery is the most important type of secondary cell having a lead anode and a grid of lead packed with Lead oxide as cathode. A 38% solution of sulphuric acid is used as electrolyte. The battery holds 3.5 L of the Acid.During the discharge of battery the density of Sulphuric Acid falls and when the cell is charged the density again recovers .

i Write the reaction of Anode when battery is in Use? **1**

ii What is the effect on concentration of Sulphuric Acid on discharge ? **1**

iii What is a Primary cell ? **1**

iv What are Secondry cells ? **1**

30. The number of molecules colliding simultaneously in the reaction to give products is called molecularity .Those reactioins in which one reactant molecule gives the product are called Unimolecular reactions.Those reactions in which there are two reactant molecules give rise to produt it is called Bimolecular reaction .Those reactions in which three reactant molecules collide to give the products they are called as Ternary reactions . Molecularity is never fractional,it is always a whole number . **4**

i Can molecularity have Fractional value ?

ii Give an example of Bimolecuiar reaction.

iii Give an example of Unimolecular reaction.

iv What are Unimolecular reactions ?

SECTION E

Long answer type questions

31. Derive the equation for rate constant (K) for zero order and First Order reactions. Explain Rate Law . **5**

OR

Explain the Galvanic cell with oxidation and reduction reactions. Draw the diagram . Represent it and also give the value of its standard Electrode Potential .

32. Explain Lead storage cell and Fuel cell with diagram and reactions . **5**

33. What are Colligative properties ? Explain its types.1.00 g of a non-electrolyte solute dissolved in 50 g of benzene lowered the freezing point of benzene by 0.40 K. The freezing point depression constant of benzene is 5.12 K kg mol^{-1}. Find the molar mass of the solute. **5**

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सत्यमेव जयते
Ministry of Youth Affairs and Sports
Government of India

Administration Manual

Khelo India Fitness Assessment in Schools - version 2.0

Sports Authority of India
Last Updated: October, 2020

Disclaimer

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Gate No. 10, JLN Stadium, New Delhi - 110003

To Get Started

Assessors (PETs/Sports Coaches/Fitness Assessors)
Download “Khelo India (School Version)” (Assessor App) from Google Play Store. Create/Login with your User Name and Password.

Principal/HM Login:
schoolfitness.kheloindia.gov.in. Create/Login with your User Name and Password.

Parent App/Interface
Download “Khelo India App” from Google Play Store. Create/Login with your User Name and Password.

Overview

Fitness defines the ability to perform physical activity, and encompasses a wide range of abilities. Each activity and sports requires a specific set of skills, and so being fit for an activity or a sport does not necessarily make you fit for another.

Fitness is generally divided into specific fitness categories or components, and each can be tested and trained individually. The following pages will help you do the Fitness Test Administration in your school more effectively using Khelo India Fitness Assessment App and viewing the School Dashboard on School Interface.

BATTERY OF TESTS

AGE GROUP 5-8 YEARS | CLASS 1 to 3

At Primary class 1-3, children should acquire Fundamental Movement Skills (FMS) leaving the learning of specific physical activities to later stages. FMS provide the building blocks for many physical activities, such as playing games, dance, and sport. Locomotor, Manipulative & Body Management abilities are key to success in most sports and physical activities. Abilities of children in class 1-3 which need to be measured and tracked are

1. Body Composition (BMI)
2. Coordination (Plate Tapping)
3. Balance (Flamingo Balance)

Which are important for controlling the body in various situations.

AGE GROUP: 9-18+ YEARS | CLASS 4 to 12

For Class 4 to 12, it is important for students to have an overall physical fitness. The following Components are to be considered in Physical Health and Fitness Profile:

1. Body Composition (BMI)
2. Strength
    a. Abdominal (Partial Curl-up)
    b. Muscular Endurance (Push Ups for Boys, Modified Push Ups for Girls)
3. Flexibility (Sit and Reach Test)
4. Cardiovascular Endurance (600 Meter Run/Walk)
5. Speed (50 mt. Dash)

Test Descriptions for Children

Body Mass Index

What does it measure: Body Composition refers primarily to the distribution of muscle and fat in the body. Body size such as height, lengths and girths are also grouped under this component.

The test performed is Body Mass Index (BMI), which is calculated from body Weight (W) and height(H). BMI = W / (H x H), where W = body weight in kilograms and H = height in meters. The higher the score usually indicating higher levels of body fat.

Measuring Height Accurately

Remove the participant's shoes, bulky clothing, and hair ornaments, and unbraid hair that interferes with the measurement.

Take the height measurement on flooring that is not carpeted and against a flat surface such as a wall with no molding.

Have the participant stand with feet flat, together, and back against the wall. Make sure legs are straight, arms are at sides, and shoulders are level.

Make sure the participant is looking straight ahead and that the line of sight is parallel with the floor.

Take the measurement while the participant stands with head, shoulders, buttocks, and heels touching the flat surface (wall). (See illustration.) Depending on the overall body shape of the participant, all points may not touch the wall.

Use a flat headpiece to form a right angle with the wall and lower the headpiece until it firmly touches the crown of the head.

Make sure the measurer's eyes are at the same level as the headpiece.

Lightly mark where the bottom of the headpiece meets the wall. Then, use a metal tape to measure from the base on the floor to the marked measurement on the wall to get the height measurement.

Accurately record the height to the nearest 0.1 centimeter.

Measuring Weight Accurately

Infrastructure/Equipment Required:

Flat, Clean surface, Weighing Machine, Stadiometer/Measuring Tape pasted on a wall

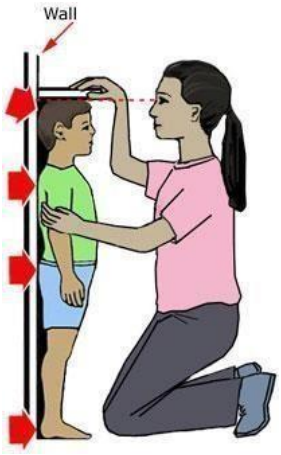
Scoring:

Height recorded in cm and mm.

Weight will be recorded in kilogram (kg) and grams (gms).

Record the weight to the nearest decimal fraction (for example, 25.1 kilograms).

Accurately record the height to the nearest 0.1 centimeter.



Use a digital scale. Avoid using bathroom scales that are spring-loaded. Place the scale on firm flooring (such as tile or wood) rather than carpet. Have the participant remove shoes and heavy clothing, such as sweaters. Have the participant stand with both feet in the center of the scale. Record the weight to the nearest decimal fraction (for example, 25.1 kilograms).	

Plate Tapping Test

What does it measure:
Tests speed and coordination of limb movement

How to Perform:

If possible, the table height should be adjusted so that the subject is standing comfortably in front of the discs. The two yellow discs are placed with their centers 60 cm apart on the table. The rectangle is placed equidistant between both discs.

The non-preferred hand is placed on the rectangle. The subject moves the preferred hand back and forth between the discs over the hand in the middle as quickly as possible.

This action is repeated for 25 full cycles (50 taps).

Infrastructure/Equipment Required:
Table (adjustable height), 2 yellow discs (20cm diameter), rectangle (30 x 20 cm), stopwatch

Scoring:
The time taken to complete 25 cycles is recorded

Administrative Suggestion:
Participants should be encouraged to stand in a balanced posture, feet apart to shoulder width. Results are usually better if the participant can maintain constant pace during most of the run.

Flamingo Balance Test

What does it measure:
Ability to balance successfully on a single leg. This single leg balance test assesses the strength of the leg, pelvic, and trunk muscle as well as Static balance.

How to Perform:
Stand on the beam. Keep balance by holding the instructor's hand (if required to start).

While balancing on the preferred leg, the free leg is flexed at the knee and the foot of this leg held close to the buttocks.

Start the watch as the instructor lets go of the participant/subject.

Pause the stopwatch each time the subject loses balance (either by falling off the beam or letting goes of the foot being held).

Resume over, again timing until they lose balance. Count the number of falls in 60 seconds of balancing.

If there are more than 15 falls in the first 30 seconds, the test is terminated.

Infrastructure/Equipment Required:
Non Slippery even surface, Stopwatch, can be done on just standing on beam.

Scoring:
The total number of falls or loss of balance in 60 seconds of balancing is recorded.

If there are more than 15 falls in the first 30 seconds, the test is terminated.

Administrative Suggestion:
Participants should be encouraged to eyes focused on stationary object straight ahead.

Partial Curl Up (30 seconds)

What does it measure:
The curl up test measures abdominal muscular strength and endurance of the abdominals and hip-Flexors, important in back support and core stability.

How to Perform:

The subject lies on a cushioned, flat, clean surface with knees flexed, usually at 90 degrees, with hands straight on the sides (palms facing downwards) closer to the ground, parallel to the body.

The subject raises the trunk in a smooth motion, keeping the arms in position, curling up the desired amount (at least 6 inches above/along the ground towards the parallel strip).

The trunk is lowered back to the floor so that the shoulder blades or upper back touch the floor.

Infrastructure/Equipment Required:
Flat clean cushioned surface with two parallel strips (6 inches apart), Stopwatch, Recording sheets, Pen

Scoring:
Record the maximum number of Curl ups in a certain time period 30 seconds.

Administrative Suggestion:
Participants should be encouraged to keep normal breathing rate. Results are usually better if the participant can maintain constant pace during the activity.

Push Ups (Boys)/Modified Push Ups (Girls)

What does it measure:
Upper body strength endurance, and trunk stability.

How to Perform:
A standard push up begins with the hands and toes touching the floor, the body and legs in a straight line, feet slightly apart, the arms at shoulder width apart, extended and at a right angles to the body.

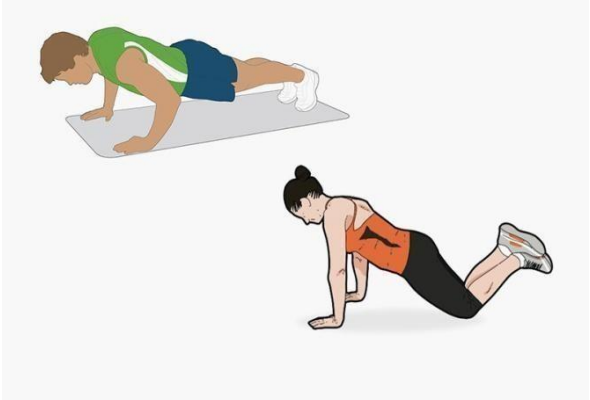
Keeping the back and knees straight, the subject lowers the body to a predetermined point, to touch some other object, or until there is a 90-degree angle at the elbows, then returns back to the starting position with the arms extended.

This action is repeated, and test continues until exhaustion, or until they can do no more in rhythm or have reached the target number of push-ups.

For Girls: push-up technique is with the knees resting on the ground.

Infrastructure/Equipment Required:
Flat clean cushioned surface/Gym mat

Scoring:
Record the number of correctly completed push-ups.



Administrative Suggestion:
Participants should be encouraged to emphasis to keep the back straight. Results are usually better if the participant can maintain constant pace during the activity.

Sit and Reach

What does it measure:
Common measure of flexibility, and specifically measures the flexibility of the lower back and hamstring muscles. This test is important as because tightness in this area is implicated in lumbar lordosis, forward pelvic tilt and lower back pain

How to Perform:
This test involves sitting on the floor with legs stretched out straight ahead. Shoes should be removed. The soles of the feet are placed flat against the Sit and Reach box. Both knees should be locked and pressed flat to the floor - the tester may assist by holding them down.

With the palms facing downwards, and the hands on top of each other, the subject reaches forward along the measuring line as far as possible.

Ensure that the hands remain at the same level, not one reaching further forward than the other. After some practice reaches, the subject reaches out and holds that position for at one-two seconds while the distance is recorded. Make sure there are no jerky movements.

Infrastructure/Equipment Required:
Sit and Reach box with the following dimensions: 12" x 12" (sides) 12" x 10" (front and back) 12" x 21" (top) Inscribe the top panel with centimeter/mm gradations. It is crucial that the vertical plane against which the subject's feet will be placed is exactly at the 23 cm mark. Flat clean cushioned surface/Gym Mats

Scoring:
The score is recorded (difference between initial position and final position), in cm and mm, as the distance reached by the hand.

Administrative Suggestion:
Proper warm-up and static stretching of the lower back and posterior thighs is very important for this test. A partner placing his/her hands lightly across knees can prevent the flexing of knees. Keep the hands over each other (fish pose). Besides in order to prevent the test apparatus from sliding away from the participants during the test, it should be placed against a wall or a similar immovable object.

The test trial is repeated if:
(i) The hands reach out unevenly or (ii) The knees are flexed at the time of doing the test.

600 Mtr Run/Walk

<table>
<tr><td colspan="2">What does it measure:
Cardiovascular Fitness/Cardiovascular Endurance</td></tr>
<tr><td rowspan="3">How to Perform:
Participants are instructed to run 600 mts. in the fastest possible pace.

The participants begin on signal, “ready, start” as they cross the finish line elapsed time should be announced to the participants.

Walking is permitted but the objective is to cover the distance in the shortest possible time.</td><td>Infrastructure/Equipment Required:
Stopwatch, whistle, marker cone, lime powder, measuring tape, 200 or 400 mts with 1.22 mt (minimum 1 mt) width preferably on a flat and even playground with a marking of starting and finish line.</td></tr>
<tr><td>Scoring:
Time taken for completion (Run or Walk) in min, sec, mm</td></tr>
<tr><td>  </td></tr>
<tr><td colspan="2">Administrative Suggestion:
Participants should be encouraged to practice running with emphasis placed on the concept of pace. Results are usually better if the participant can maintain constant pace during most of the run and perhaps using a strong closing effort.</td></tr>
</table>

50 Mtr Dash (Standing Start)

What does it measure:
Determines acceleration and speed

How to Perform:
A thorough warm up should be given, including some practice starts and accelerations.

Start from a stationary position, with one foot in front of the other. The front foot must be on or behind the starting line. This starting position should be static (dead start).

The tester should provide hints for maximizing speed (such as keeping low, driving hard with the arms and legs) and encouraged to continue running hard through the finish line.

Infrastructure/Equipment Required:
Measuring tape or marked track, stopwatch, cone markers, flat and clear surface of at least 60 meters.

Scoring:
Time taken for completion

Administrative Suggestion:
Participants should be encouraged to practice running with emphasis placed on the concept of pace. Results are usually better if the participant can maintain constant pace during most of the run and perhaps using a strong closing effort.

Do's and Dont's

Preparing for Assessments

To participate in Physical Fitness Assessments, some good preparation can go a long way.

1. **It is recommended that the assessments are done twice a year (for Term I and Term II in each academic year). The minimum gap between tests should be 4 months.**
2. Find out what is required. Most fitness tests will require a combination of evaluations to assess speed, endurance/stamina, strength, flexibility, and body composition. Read about these tests and plan for the same.
3. Determine the current abilities. Pretend you are taking their test today and perform each exercise. Note how close they came to the goal and how much further they need to go.
4. Calculate the time you have to prepare. You need adequate time to prepare for the test.
5. Participants must pace themselves. Maintaining a constant tempo is crucial for completing long and repetitive exercises, like Curl-ups, Push-ups and 600 mt run/walk. If you work too fast at the beginning of the exercise, you may become fatigued quickly. It is more effective to maintain a steady pace throughout.
6. Participants should be encouraged to practice for few weeks with emphasis placed on the concept of pace. Results are usually better if the participant can maintain consistency in performance during this practice period.

Before a Test

Get appropriate clothing

1. Participant to wear comfortable clothes with sports shoes.
    a. In case shoes are not available, he/she can run bare-feet. He/she needs to take precaution so that the foot doesn't get hurt with pointed objects in the playingfields.
    b. Avoid leather shoes.
2. Get clothes that are comfortable to wear and run or bend (eg. T-shirt and comfortable fitting trousers/half pants).
3. Wearing socks that will keep the feet dry.

Safety Measures

1. If you plan to do for a group of people, decide Date/Time when you want to do the test.
2. Ensure that the play field is flat and clear from stones/pointed objects that may injurechildren.
3. Ensure that the equipment required for the tests are available at the place where you want to do the tests.
4. Have a First Aid Box.

Medical:

No participant with known medical problems, are allowed to take part in the test.

Test	Resource Required
Body Composition (BMI)	1 test administrator, 1 recorder
Coordination (Plate Tapping Test)	1 test administrator, 1 recorder
Balance (Flamingo Balance Test)	1 test administrator, 1 recorder
Flexibility (Sit and Reach Test)	1 test administrator, 1 recorder
Strength - Core (Partial Curl-up)	1 test administrator, 1 recorder
Muscular Endurance (Push Ups for Boys, Modified Push Ups for Girls)	1 test administrator, 1 recorder
Cardiovascular Endurance (600 Mtr Run/Walk)	1 person at start, 1 person for each lane at finish
Speed (50 Mtr. Dash)	1 person at start, 1 person for each lane at finish

Additional Volunteers: 1 per 20 participants, if you are doing for a larger group.

List of Equipment

Test	Equipment
Body Composition (BMI)	Height Measuring Tape, Weight Machine, even and non-slippery hard surface
Strength Abdominal (Partial Curl-up)	Stopwatch, Gym/Yoga mat, Marking Tape (for 6 inches parallel strips)
Muscular Endurance (Push Ups for Boys, Modified Push Ups for Girls)	Gym/Yoga Mat
Flexibility (Sit and Reach Test)	Sit and Reach Box (dimensions: 12" x 12" (sides) 12" x 10" (front and back) 12" x 21" (top) Inscribe the top panel with centimeter/mm gradations), Gym/Yoga mat
Cardiovascular Endurance(600 Mtr Run/Walk)	200 or 400 mts with 1.22 mt (minimum 1 mt) width track marking of starting and finish line. Stopwatch (1 per lane)
Speed (50 Mtr. Dash)	Stopwatch (1 per lane), cone markers, Marked track of at least 60 meters with 1.22 mt (minimum 1 mt) lane with starting and finish line.
Coordination (Plate Tapping)	Table (adjustable height), 2 yellow discs(20cm diameter), rectangle (30 x 20 cm), stopwatch
Balance (Flamingo Balance Test)	Stopwatch, Beam locally procured of a standard brick shape and height

Conduct procedure of test:

1. Briefing to the participants:
    a. Instruct for warm-up to avoid injury.
    b. Test Demonstration: Provide demonstration of test procedure.
2. Steps:
    a. Arrange the participants in the desired groups.
    b. Tester reaches to the desired station.
    c. Equipment to be placed at the station.

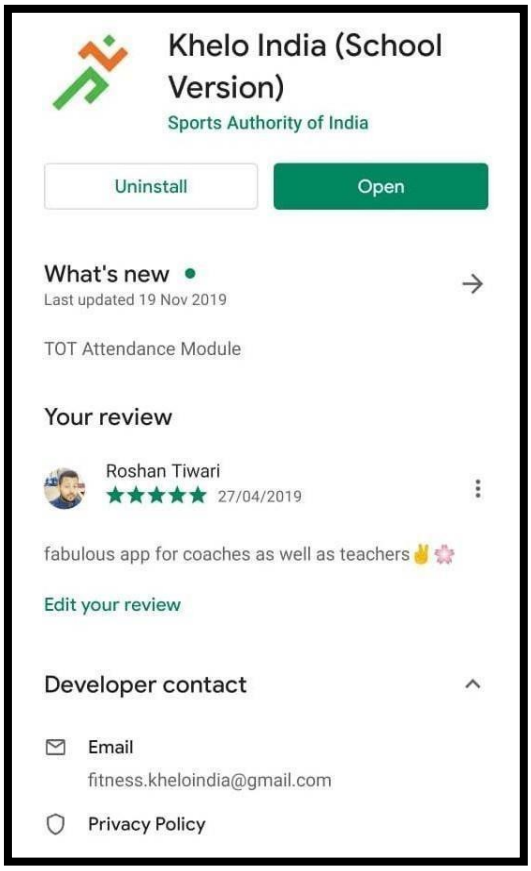
Usage of Khelo India Mobile App and Portal

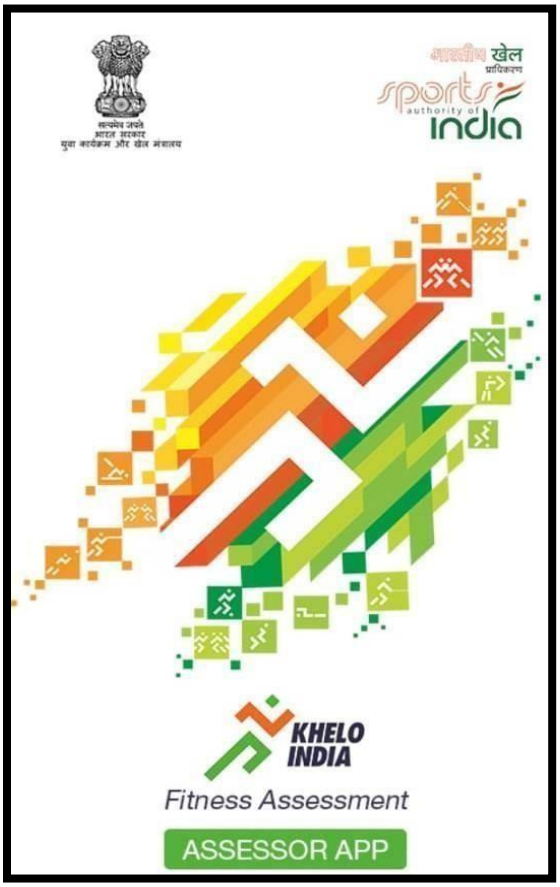
1. Assessor App
2. School Portal
3. Parent App

Assessor App

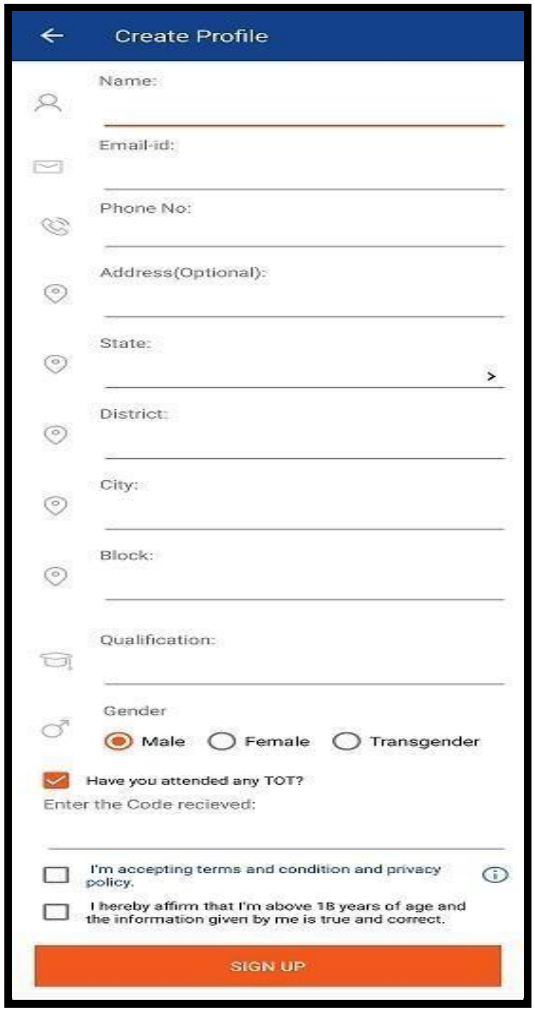
Se-lf Registration of Assessor

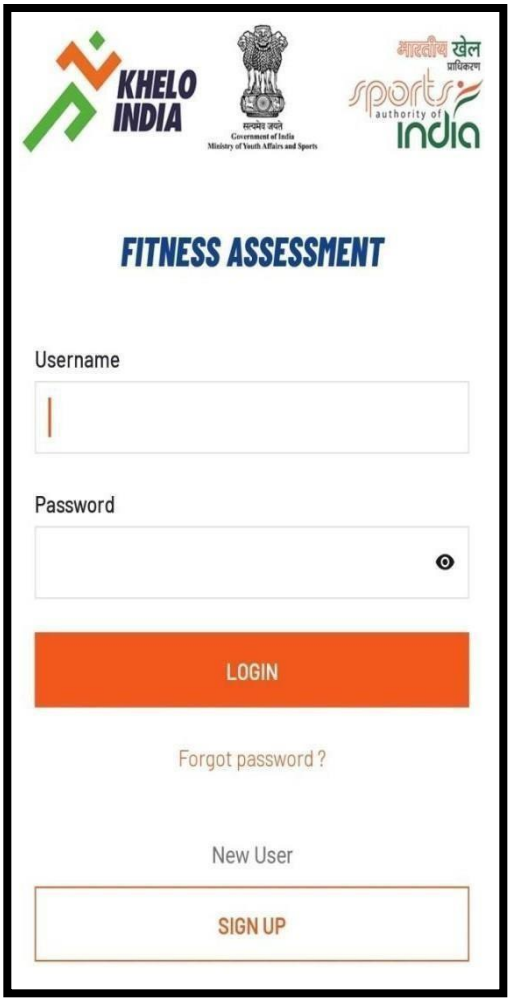
Step:1 Download "Khelo India (School Version)"(Assessor App) from Google Play Store





Step:2 Sign Up at Khelo India Assessor App





Note: After the Signing up, Assessor will receive a notification on registered mobile number and credentials will be provided at the registered Email Id.

Recording and Submission of Data

Recording of data to be done on **Khelo India Assessor App.**

To do the recording, do the following

1. Make sure that the Mobile is connected to internet. You can proceed further only if Internet is available.
2. Open Khelo India Assessor App.
3. Login with the user name and password issued to you through your principal.
4. Choose School (your School)
5. Choose the test you want to take. (Say Speed > 50 mt dash)
6. Get students to stand in a line (as instructed).
7. Start the Test (as per instruction). In case of Timers, start thetimer.

8. In case of multiple students taking Timer based tests, use the start and split timer.
9. Once they have finished the test:
    a. Enter the performance against each test (if required). In case of Timing based tests, split timer/stop timer to be used.
    b. Scan the QR code of the student from his ID card. In case, he doesn't have ID Card with QR Code, choose his/her class and section, Name. The ID no. will get automatically filled up.
10. **Click on "Save Data" button and Tap on refresh button to synchronize the assessment data**
11. After you finish taking the tests, click on "Go to Dashboard" by logging to schoolfitness.kheloindia.gov.in.
12. The Fitness Dashboard of the students will get updated. Parents can log into schoolfitness.kheloindia.gov.in by using their user name and password issued tothem

PN: Make sure that you have saved the data, after every test. Do not forget to click on "Go to Dashboard" button, which will prepare your fitness dashboard.

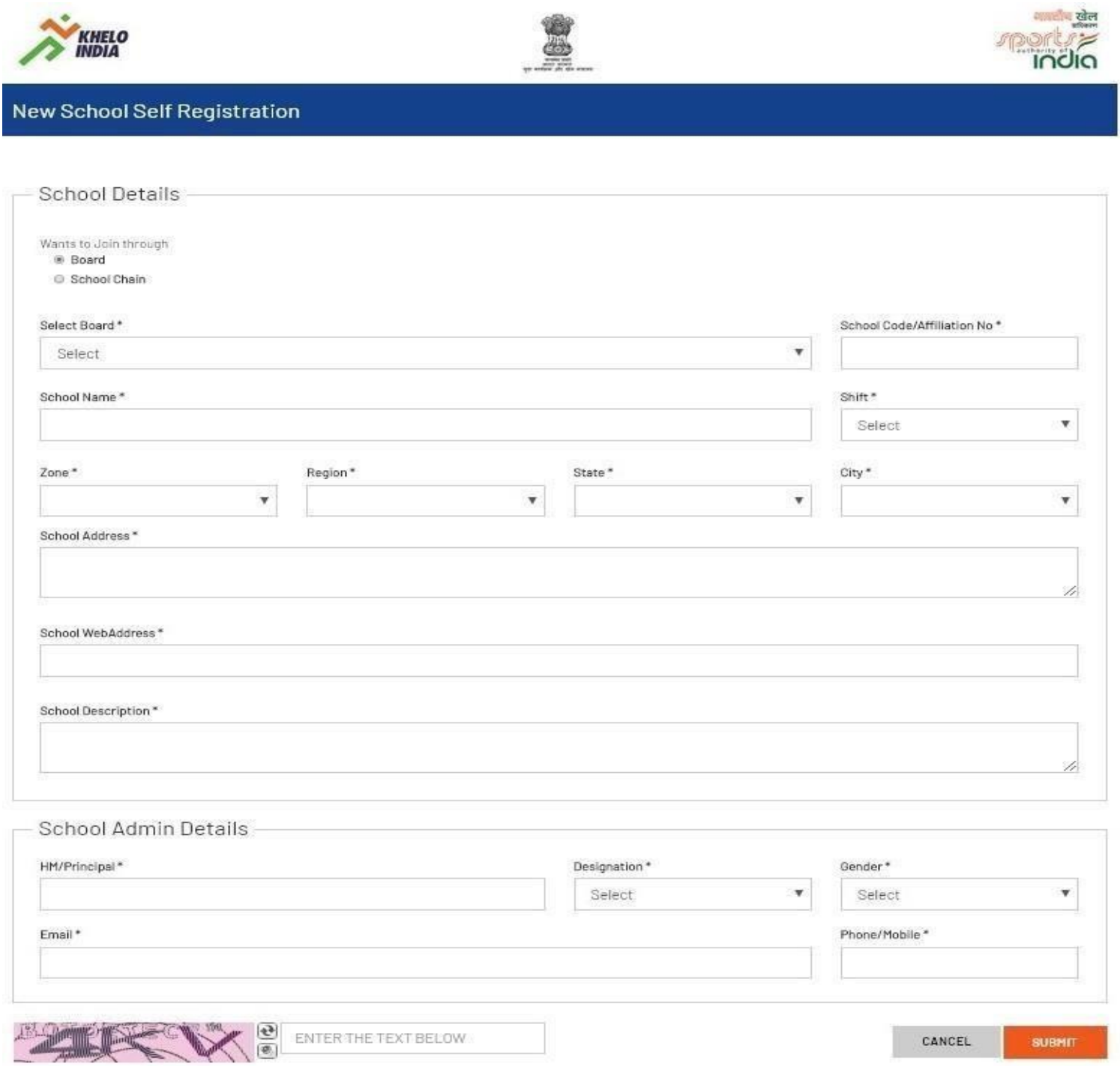
School Principal Portal

Self Registration- School

Step 1:Principal/HM of the School to open the following link on the web browser: https://schoolfitness.kheloindia.gov.in

Click on “Sign Up”

Step 2: School will self-register for Khelo India Programme by filling up the basic details provided in the form



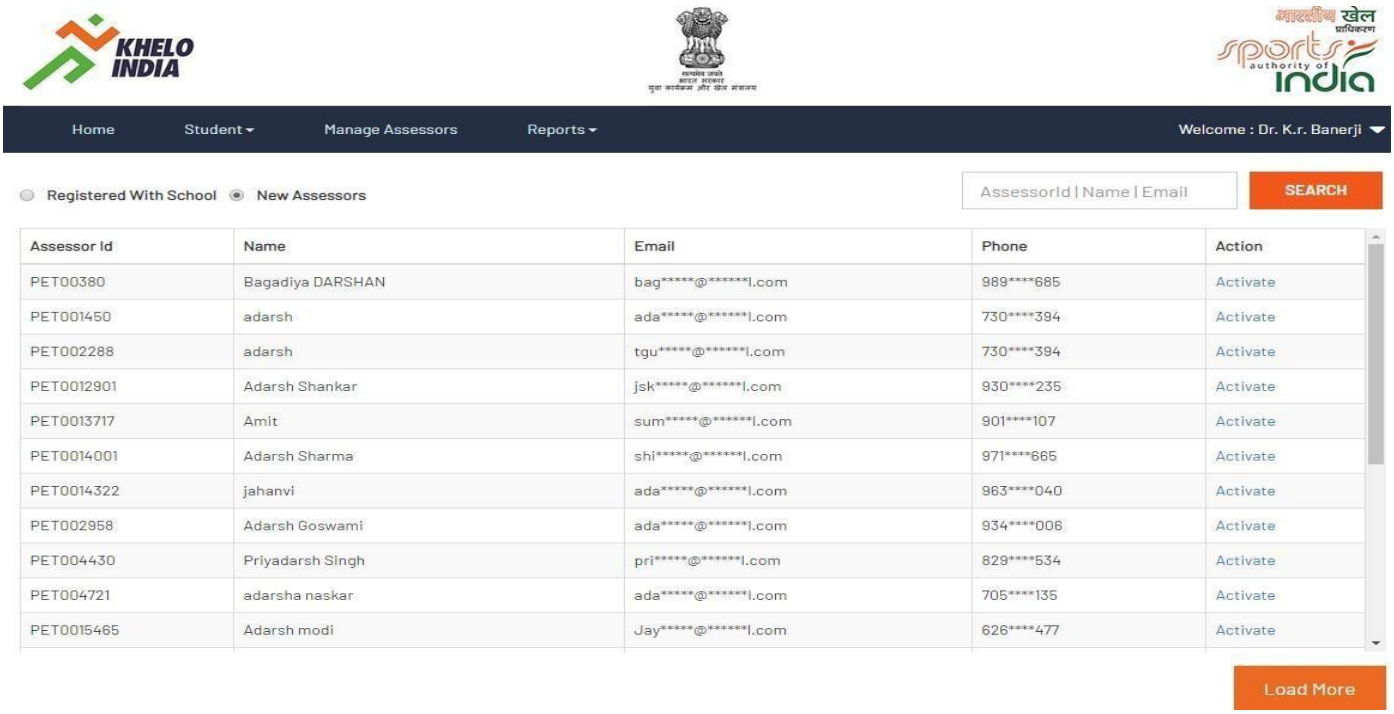
Note : After Activation of school from Admin Panel, school will get Principal / HM Login Credential on their Registered E-Mail Id and they can login through provided credentials into the portal to proceed further.

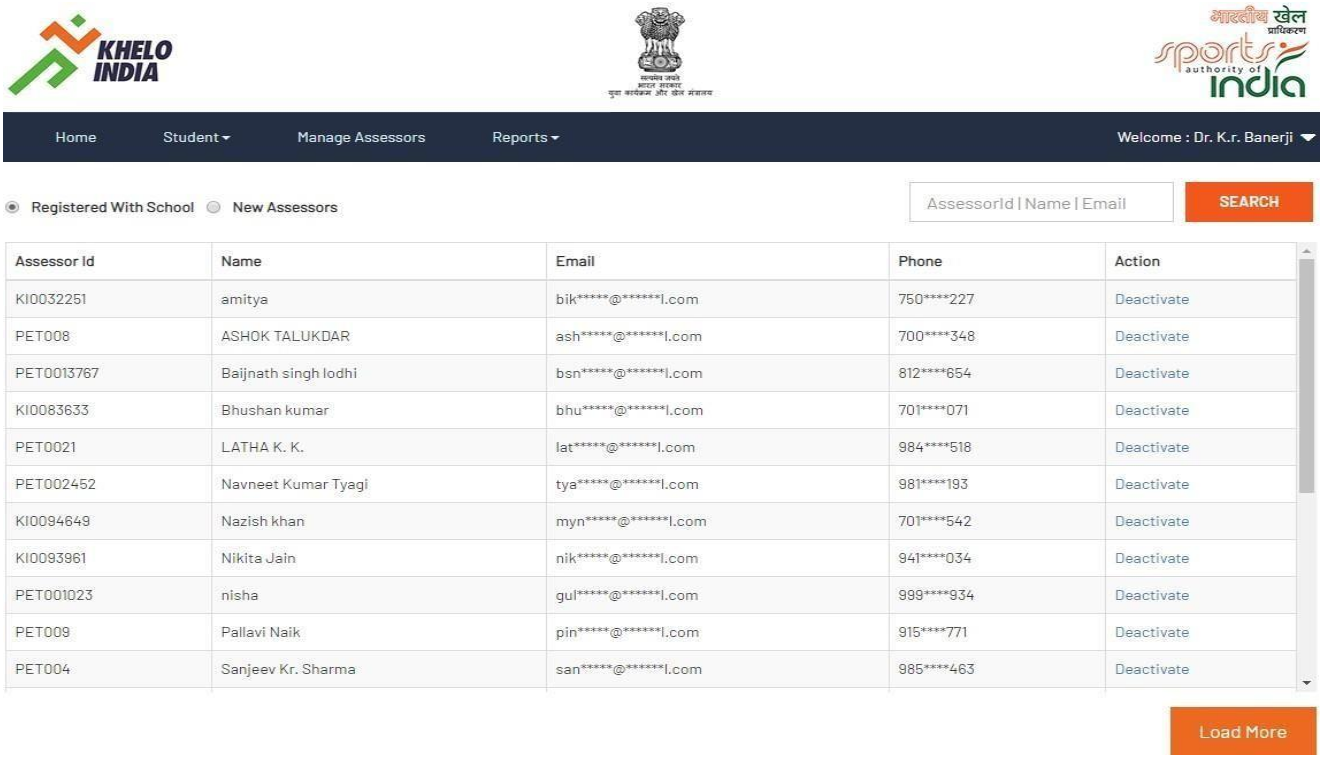

Login as HM/Principal
Username
Password
U6W
Retype the characters from the picture:
ENTER THE TEXT BELOW
Sign in
Forgot password?
New School Self Registration

Link Assessor To School

Manage Assessor -> New Assessor -> Search PET or Email Id whom you want to link to the school > Click on Activate.

Assessor Will Receive User Name and Password on their Registered Mail Id





Student Data Upload

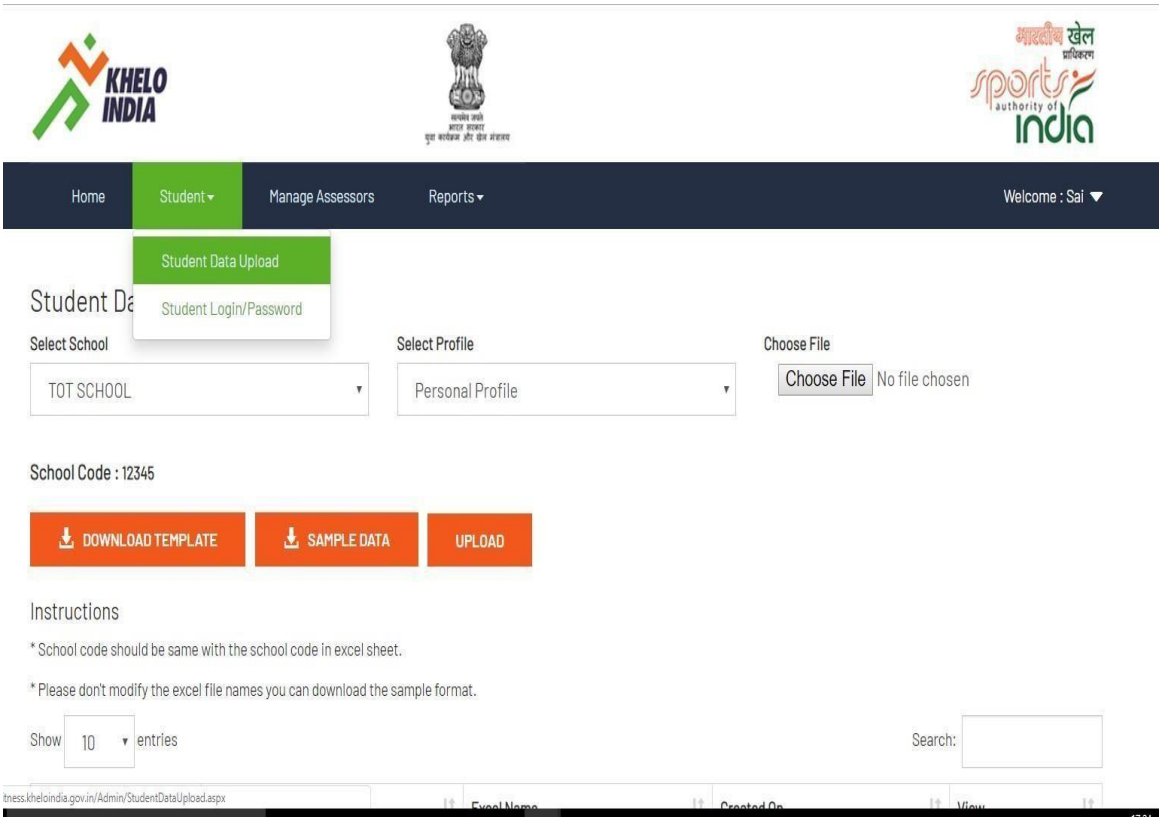
Principal/HM of the School to open the following link on the web browser:
schoolfitness.kheloindia.gov.in

> Log into the Interface as the Principal/HM of the School. You are authorized to manage the school related information, assign school coordinators for the fitness assessment tests. **The most important thing to do is to add student's data to school.**

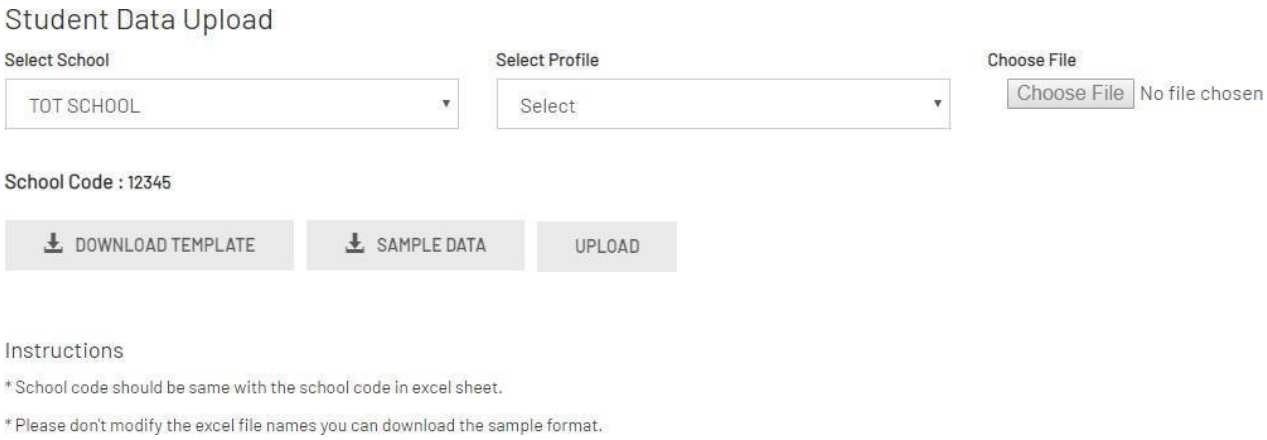
Login as Principal/HM	**> Student**	**> Student Data Upload**

Procedures to be followed:

Step 1:

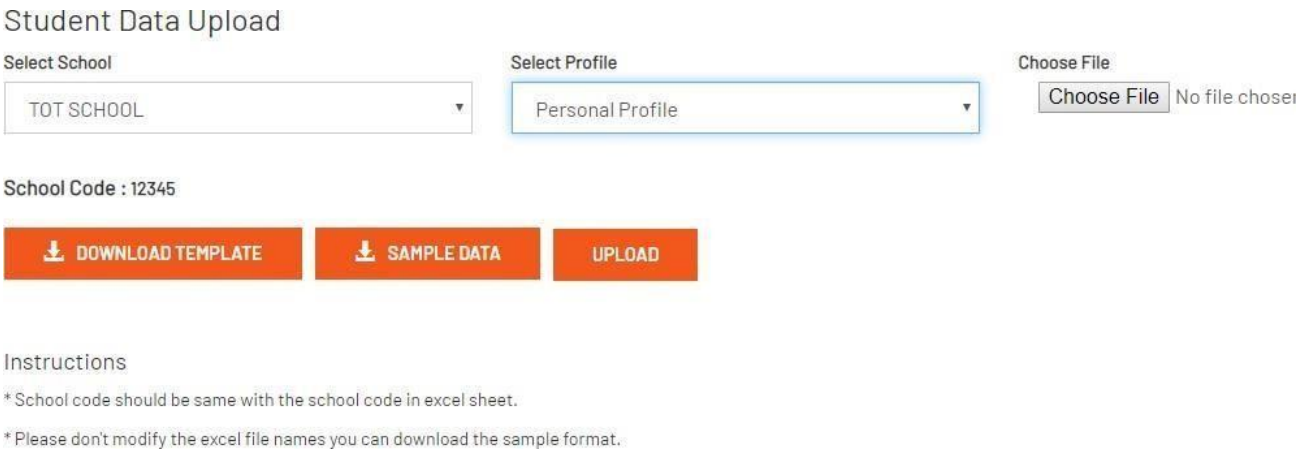


Step 2:



- Here you can upload the data.

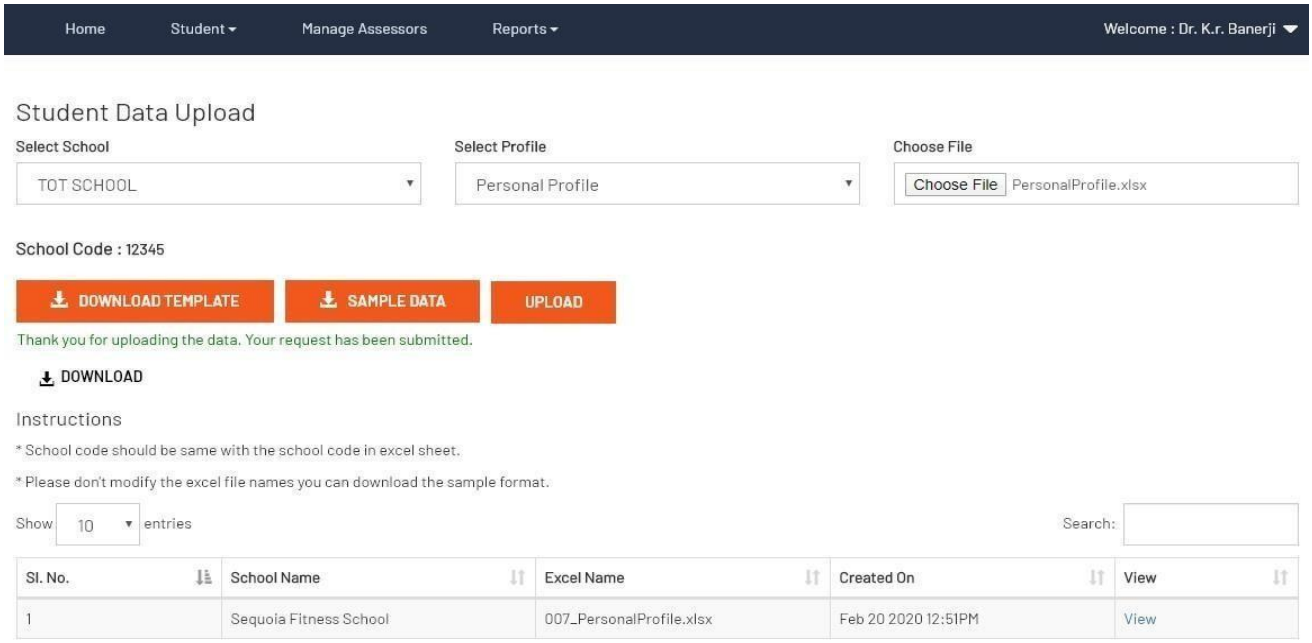
Step 3:



- Choose the sheet you want to upload (list of students of the schools):

  PersonalProfile (MANDATORY)

- Select the Excel sheet and Upload.

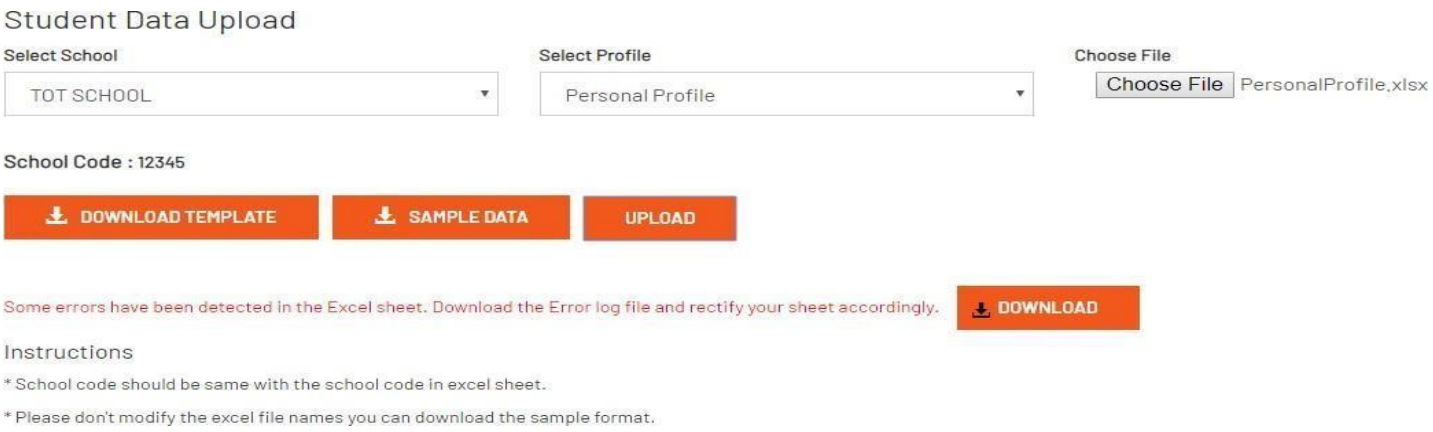


How to fill up PersonalProfile

- **Fields marked in Orange colour are mandatory whereas yellow ones are optional**

	A	B	C	D	E	F	G	H	I	J	K
1	School Code/Affiliation No.	Student Admission No	Name	Gender	Class	Section	Roll No	DOB (DD/MM/YYYY)	Domicile (Hometown)	Favorite Sports	Hobbies
2											
3											
4											

1. School Code/Affiliation No.: School code should not be empty and that should always match with the school code that you have been chosen in the school dropdown. For reference you can find the respective school code of the chosen school below the School dropdown after selecting school.
2. Student Admission No. : Student Admission No. should not be empty and duplicate. (**registration/admission number of student)**
3. Name: Name should not be blank
4. Gender: Gender should not be blank. Allowed Characters are Boy/ Girl/ Male/ Female/ B/ G/ M/ F/ Transgender/ T
5. Class: Class should not be empty. (I,II,III,IV,XI,XII)
6. Section: Section should not be empty.
7. Roll No: Roll No should not be empty.
8. DOB: DOB should not be empty and date should be in DD/MM/YYYY format.



Step 4

- **If data in the excel sheet is not in the correct format it will show the error message like above. You can download the error details file and rectify your excel sheet and upload that again**.

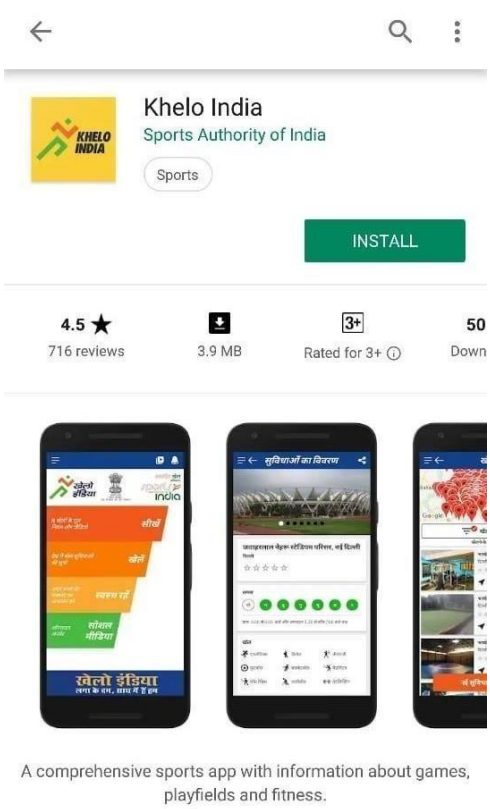
Now the school is ready to do assessment in the school.

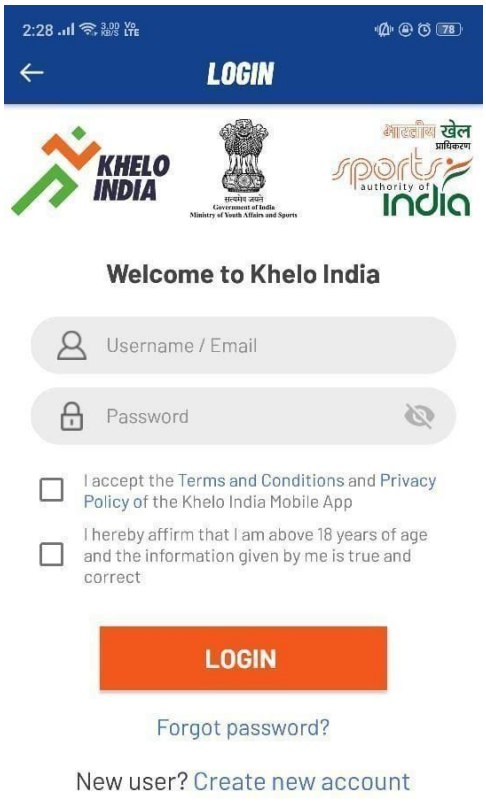
Khelo India Parent App

Installation and Creation of Parent User ID

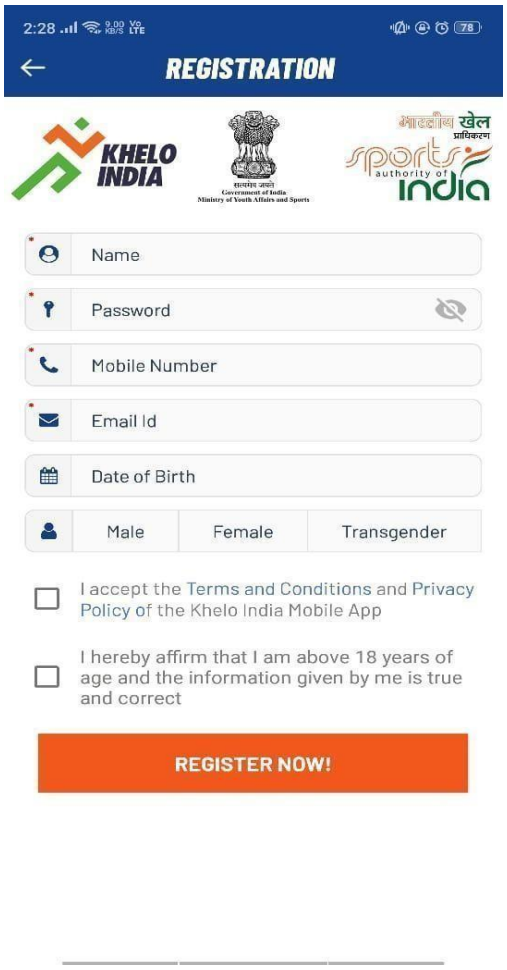
Ask parents to download “Khelo India App” from Google Play Store or Apple Store and Install the App. Parents to click on “Create New Account” to create a Parent Username and Password. They will receive email and SMS confirmation.

Download and Install	Login as Parent

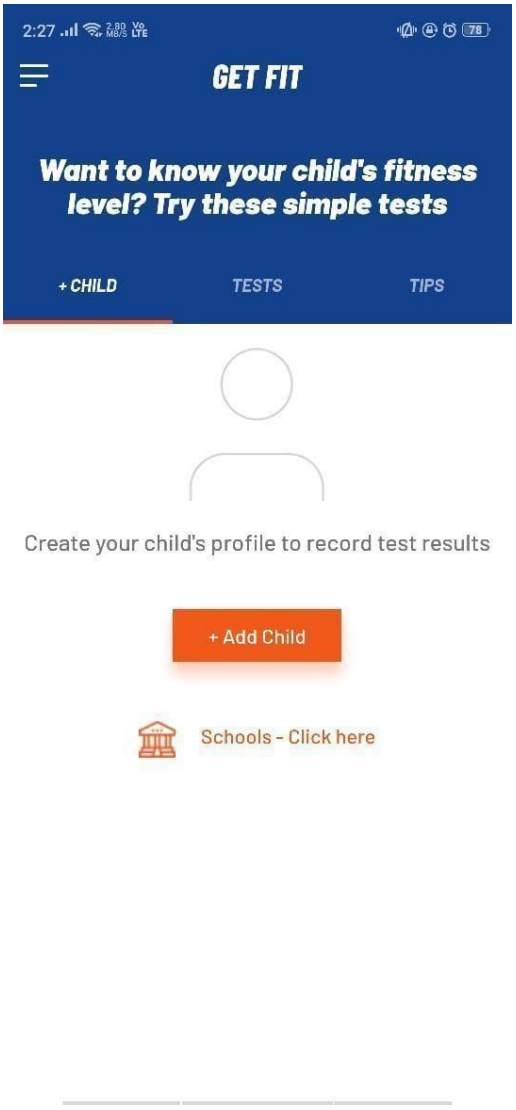
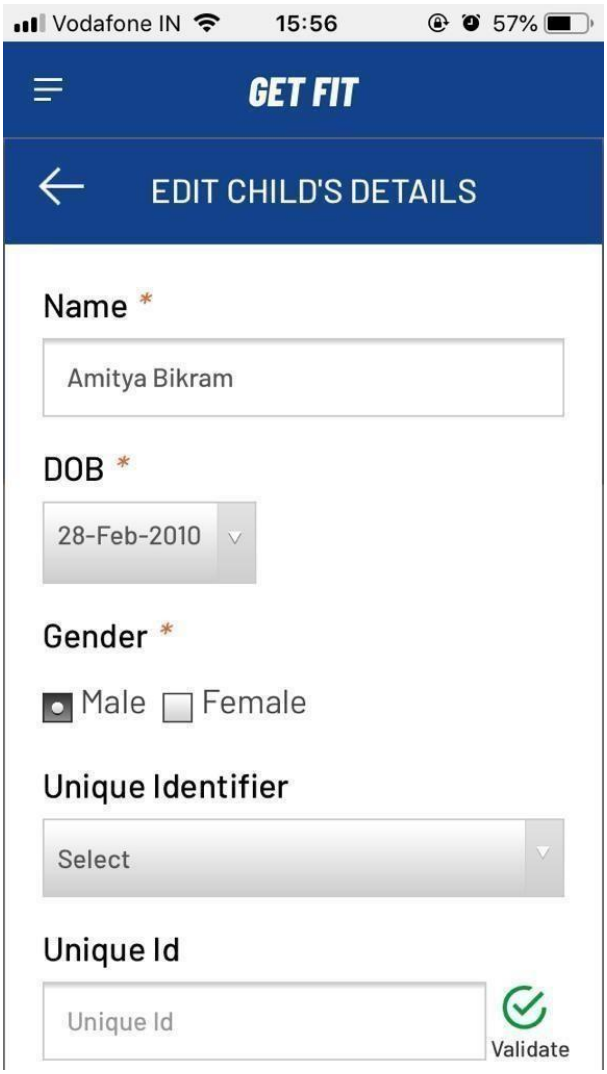


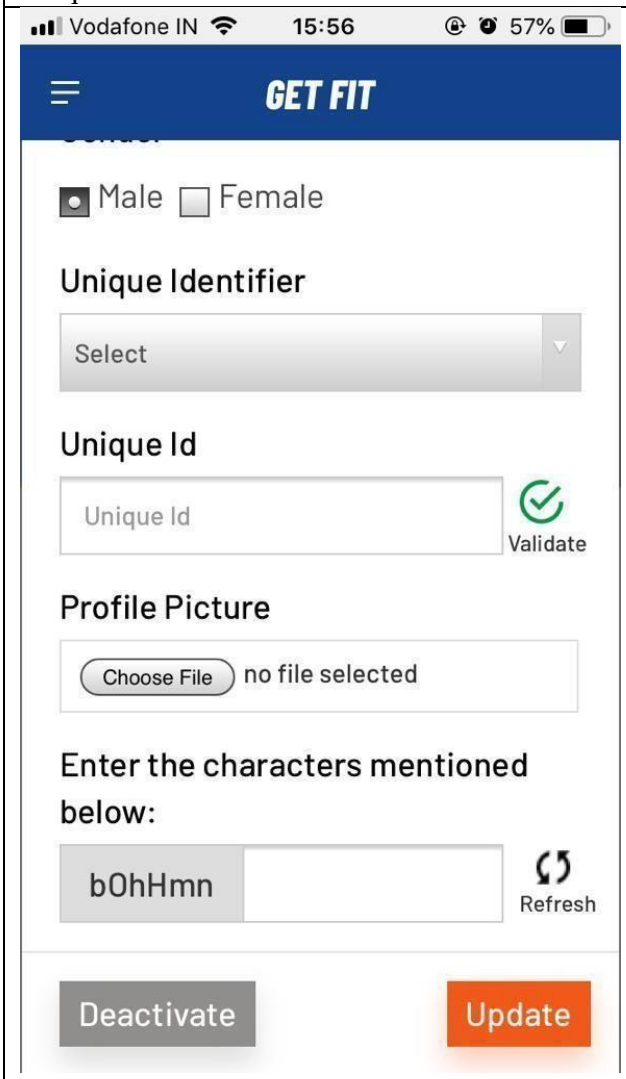
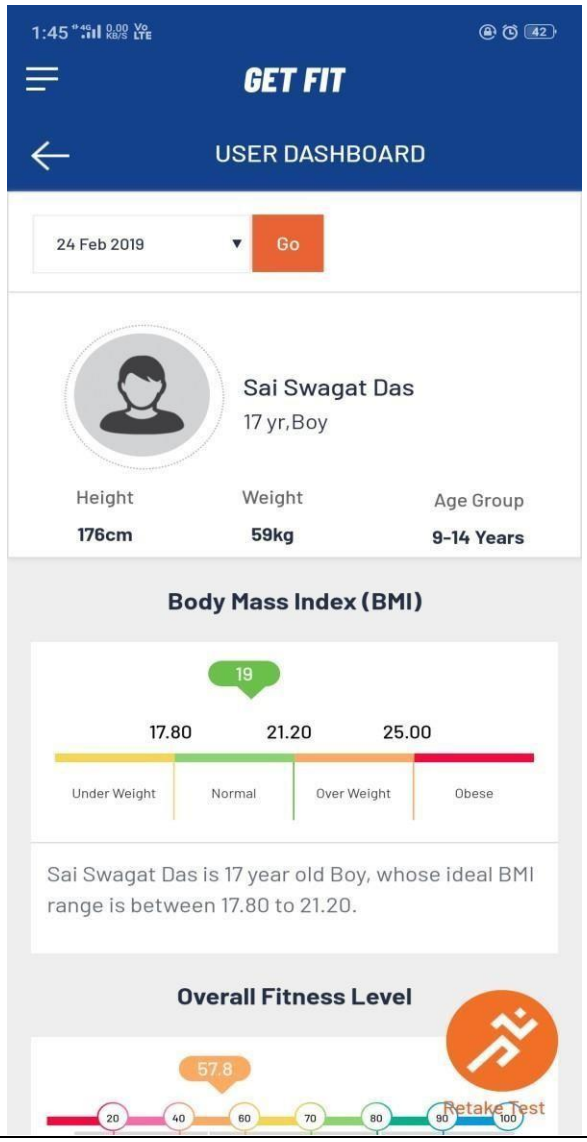


New Parents to Register. Then Login.	Choose “Get Fit”.


2:28
REGISTRATION
KHELO INDIA
Government of India
Ministry of Youth Affairs and Sports
sports authority of india
Name
Password
Mobile Number
Email Id
Date of Birth
Male
Female
Transgender
I accept the Terms and Conditions and Privacy Policy of the Khelo India Mobile App
I hereby affirm that I am above 18 years of age and the information given by me is true and correct
REGISTER NOW!


1:42
KHELO INDIA
Government of India
Ministry of Youth Affairs and Sports
sports authority of india
Basic rules and videos of 18 sports
LEARN
List of playing facilities across the country
PLAY
Assess your child's fitness
GET FIT
Online Updates
SOCIAL MEDIA
खेलो इंडिया
लगा के दम, साथ में हैं हम

Click on Add a Child	Add Child’s profile
	

To view his/her school fitness assessment date, please link the Khelo India Fitness ID as unique identifier	Click on a child's profile to view Child's Fitness Dashboard
	

Contact Information

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KHELO
INDIA

Summer Assignment

Class: 12th

Subject: Artificial Intelligence

Note: Read Unit no. 2 and 3 from AI Handbook and solve the following MCQs

Unit 2: Data Science Methodology

1. **Which is the hardest stage in the foundational methodology of Data Science?**
   a. Business Understanding
   b. Data collection
   c. Modelling
   d. Evaluation

2. **Business Sponsors defines the problem and project objectives from a __ perspective.**
   a. Economic
   b. Feedback
   c. Business
   d. Data Collection

3. **Match the following and choose the correct options:**
   i. Descriptive approach A.
   ii. Diagnostic approach B. Current Status
   iii. Predictive approach C. How to solve it?
   iv. Prescriptive approach D. Probabilities of action
   a. (i)—A , (ii)—B, (iii) – C , (iv)—D
   b. (i)—B , (ii)—A, (iii) – D , (iv)—C
   c. (i)—D , (ii)—B, (iii) – A , (iv)—C
   d. (i)—A , (ii)—C, (iii) – B , (iv)—D

4. **Arrange the following statements in order**
   i: Gaps in data will be identified and plans to fill/make substitutions will have to be made
   ii: Decisions are made whether the collection requires more data or not
   iii: Descriptive statistics and visualization is applied to dataset
   iv: Identify the necessary data content, formats and sources
   a. i,ii,iii,iv
   b. iv,ii,iii,i
   c. i,iii,ii,iv
   d. ii,i,iii,iv

5. **Data Modelling focuses on developing models that are either *or* _**
   a. Supervised, Unsupervised
   b. Predictive, Descriptive
   c. Classification, Regression
   d. Train-test split, Cross Validation

6. **Statement 1- There is no optimal split percentage**
   Statement 2- The most common split percentage between training and testing data is 20%-80%
   a. Statement 1 is true Statement 2 is false
   b. Statement 2 is true Statement 1 is false
   c. Both Statement 1 and 2 are true
   d. Both Statement 1 and 2 are false

7. **Train-test split function is imported from which Python module?**
   a. sklearn.model_selection
   b. sklearn.ensemble
   c. sklearn.metrics
   d. sklearn. Preprocessing

8. **Identify the incorrect statement:**
   i. cross-validation gives a more reliable measure of your model's quality
   ii. cross-validation takes short time to run
   iii. cross-validation gets multiple measures of model's quality
   iv. cross-validation is preferred with small data
   a. ii and iii
   b. iii only
   c. ii only
   d. ii, iii and iv

9. **Identifying the necessary data content, formats and sources for initial data collection is done in which step of Data Science methodology?**
   a. Data requirements
   b. Data Collection
   c. Data Understanding
   d. Data Preparation

10. **Data sets are available online. From the given options, which one does not provide online data?**
    a. UNICEF
    b. WHO
    c. Google
    d. Edge

11. **A ____ set is a set of historical data in which outcomes are already known.**
    a. Training set
    b. Test set
    c. Validation set
    d. Evaluation set

12. **____ data set is used to evaluate the fit machine learning model.**
    a. Training set
    b. Test set
    c. Validation set
    d. Evaluation set

13. **x_train,x_test,y_train,y_test = train_test_split (x, y, test_size=0.2)**
    From the above line of code, identify the training data set size
    a. 0.2
    b. 0.8
    c. 20
    d. 80

14. **In k-fold cross validation, what does k represent?**
    a. number of subsets
    b. number of experiments
    c. number of folds
    d. all of the above

15. **Identify the correct points regarding MSE given below:**
    i. MSE is expanded as Median Squared Error
    ii. MSE is standard deviation of the residuals
    iii. MSE is preferred with regression
    iv. MSE penalize large errors more than small errors
    a. i and ii
    b. ii and iii
    c. iii and iv
    d. ii, iii and iv

16. **During Train-Test split evaluation, we usually split the data around _ between testing and training stages.**
    a. 90% -— 10%
    b. 20% — 80%
    c. 100% -—0%
    d. 0% — 100%

17. **Which of the following is NOT True for Testing ?**
    a. The volume of test data should be very small.
    b. Data validation is important.
    c. Your testing team should test the AI and ML algorithms keeping model validation.
    d. Your team must create test suites that help you validate your ML models.

18. **The first fundamental step, when starting an AI initiative is __ and selecting the relevant use cases, that the AI model will be built to address.**
    a. scoping
    b. deployment
    c. thinking
    d. designing

19. **The train-test procedure is appropriate when there is a sufficiently __ dataset available.**
    a. small
    b. moderate
    c. large
    d. average

20. **he first fundamental step when starting an project.**
    a. Evaluation
    b. Testing
    c. Deployment
    d. Scoping

21. **Expand the term RMSE.**
    a. Rational Median Square Error
    b. Root Median Square Estimate
    c. Root Mean Squared Error
    d. Root Median Sequential Estimate

22. **Which of the following is not True for Testing ?**
    a. Data validation is important.
    b. The volume of test data can be large.
    c. Your testing team should test the AI and ML algorithms keeping model validation.
    d. Regulatory compliance testing and security testing are not so important.

23. **Which of the following are correct ?**
    a. If the data you collect is not effective AI algorithm.
    b. The testing phase is essentially an iterative process.
    c. Test data should not include all relevant subsets of training data.
    d. Once the relevant projects have been selected and properly scoped, the next step of the machine learning life cycle is testing.

24. **Which of the following is true for Train-Test Split Evaluation ?**
    a. The procedure involves taking a dataset and dividing it into two subsets.
    b. The train-test procedure is appropriate when there is a small dataset.
    c. The objective is to estimate the performance of the user.
    d. It cannot be used for classification or regression problems.

25. **Techniques like descriptive and visualisations can be applied to datasets after the original data gathering to analyse the content. To close the gap, additional data collecting may be required. Identify the stage of this analytic approach.**
    a. Data Requirements
    b. Data Gathering
    c. Data Understanding
    d. Data Preparation

26. **Which of the following is a disadvantage of Cross Validation Technique?**
    a. Cross-validation provides insight into how the model will generalize to a new dataset.
    b. Cross-validation aids in determining a more accurate model prediction performance estimate.
    c. As we need to train on many training sets, cross-validation is computationally expensive.
    d. Cross-validation could result in more precise models.

27. **A good model should have an value less than 180.**
    a. RMSE
    b. MSE
    c. Focal Loss
    d. MAE

28. **Which of the following is incorrect?**
    1) Testing data is the one on which we train and fit our model basically to fit the parameters
    2) Training data is used only to assess performance of model
    3) Testing data is the unseen data for which predictions have to be made
    a. 1) and 3) only
    b. 1) and 2) only
    c. 2) and 3) only
    d. 1), 2) and 3)

29. **Which of the following are the objectives of the testing team in AI modelling?**
    1) Model Validation
    2) Security compliance
    3) Understanding data
    4) Minimizing bias
    a. (1), (2) and (3)
    b. (2), (3) and (4)
    c. (1), (3) and (4)
    d. (1), (2) and (4)

30. **In Design Thinking, phase involves gathering user feedback on the prototypes you've created as well as obtaining a better understanding of your users.**
    a. Prototype
    b. Test
    c. Ideate
    d. Empathize

31. **Once you have got an AI model that's ready for production, AI engineers then a trained model, making it available for external inference requests.**
    a. Evaluate
    b. Test
    c. Deploy
    d. Redesign

32. **Data Validation for human biases is conducted in phase of AI Model Life Cycle.**
    a. Scoping
    b. Data Collection
    c. Design
    d. Testing

33. **Which of the following is a disadvantage of Cross Validation Technique?**
    a. Cross-validation provides insight into how the model will generalize to a new dataset.
    b. Cross-validation aids in determining a more accurate model prediction performance estimate.
    c. As we need to train on many training sets, cross-validation is computationally expensive.
    d. Cross-validation could result in more precise models.

34. **A researcher wants to study the association between gender and using a mobile phone. Data collected for this study will be __**
    a. Qualitative data
    b. Quantitative data
    c. Continuous data
    d. Classified data

35. **The data scientist will use _ for predictive modelling?**
    a. Artificial Intelligence
    b. Machine Learning
    c. Training Set
    d. Deep Learning

Unit 3: Making Machines See

1. **The field of study that helps to develop techniques to help computers "see" is_____.**
   a. Python
   b. Convolution
   c. Computer Vision
   d. Data Analysis

2. **Task of taking an input image and outputting/assigning a class label that best describes the image is __.**
   a. Image classification
   b. Image localization
   c. Image Identification
   d. Image prioritization

3. **Identify the incorrect option**
   (i) computer vision involves processing and analysing digital images and videos to understand their content.
   (ii) A digital image is a picture that is stored on a computer in the form of a sequence of numbers that computers can understand.
   (iii) RGB colour code is used only for images taken using cameras.
   (iv) Image is converted into a set of pixels and less pixels will resemble the original image.
   a. ii
   b. iii
   c. iii & iv
   d. ii & iv

4. **The process of capturing a digital image or video using a digital camera, a scanner, or other imaging devices is related to __.**
   a. Image Acquisition
   b. Preprocessing
   c. Feature Extraction
   d. Detection

5. **Which algorithm may be used for supervised learning in computer vision?**
   a. KNN
   b. K-means
   c. K-fold
   d. KEAM

6. **A computer sees an image as a series of _**
   a. colours
   b. pixels
   c. objects
   d. all of the above

7. **__ empowers computer vision systems to extract valuable insights and drive intelligent decision-making in various applications, ranging from autonomous driving to medical diagnostics.**
   a. Low level processing
   b. High insights
   c. High-level processing
   d. None of the above

8. **In Feature Extraction, which technique identifies abrupt changes in pixel intensity and highlights object boundaries?**
   a. Edge detection
   b. Corner detection
   c. Texture Analysis
   d. boundary detection

9. **Choose the incorrect statement related to preprocessing stage of computer vision**
   a. It enhances the quality of acquired image
   b. Noise reduction and Image normalization is often employed with images
   c. Techniques like histogram equalization can be applied to adjust the distribution of pixel intensities
   d. Edge detection and corner detection are ensured in images.

10. **1 byte = __ bits**
    a. 10
    b. 8
    c. 2
    d. 1

11. **Computer vision can do recognition tasks such as __.**
    a. Image classification
    b. Object detection
    c. Facial recognition
    d. All of the above

12. **When a computer processes an image, it perceives it as a collection of tiny squares known as _.**
    a. pixels
    b. layer
    c. vision
    d. None of the above

13. **The resolution of the image is determined by the number of __ contained in the image.**
    a. colour
    b. pixels
    c. layers
    d. None of the above

14. **In a monochrome image, black and white colours range from _.**
    a. 255 to 1024
    b. 0 to 510
    c. 0 to 255
    d. None of the above

15. **In a monochrome image, the value of 0 corresponds to __.**
    a. Black
    b. White
    c. Grey
    d. None of the above

16. **In a monochrome image, the value of 255 corresponds to __.**
    a. Black
    b. White
    c. Grey
    d. None of the above

17. **_____ is the initial stage of computer vision involving the capture of digital images or videos.**
    a. Image Acquisition
    b. Preprocessing
    c. Image Normalisation
    d. Histogram Equalisation

18. **In scientific fields, specialised imaging techniques are used to scan high-detailed images of biological tissues or structures.**
    a. Magnetic Resonance Image
    b. Computer Tomography
    c. Both a. and b.
    d. None of the above

19. **_____ in computer vision aims to enhance the quality of the acquired image.**
    a. Image Acquisition
    b. Preprocessing
    c. Image Normalisation
    d. Histogram Equalisation

20. **The techniques used in preprocessing are _.**
    a. Noise Reduction & Image Normalisation
    b. Resizing & Cropping
    c. Histogram Equalisation
    d. All of the above

21. **_____technique used to remove unwanted elements like blurriness, random spots, or distortions in computer vision.**
    a. Noise Reduction
    b. Image Normalisation
    c. Histogram Equalisation
    d. All of the above

22. **Which technique ensures all images in a dataset have a similar scale in computer vision?**
    a. Noise Reduction
    b. Image Normalisation
    c. Histogram Equalisation
    d. All of the above

23. **_____ technique helps to adjust the brightness and contrast of an image.**
    a. Noise Reduction
    b. Image Normalisation
    c. Histogram Equalisation
    d. All of the above

24. **_____ involves identifying and extracting relevant visual patterns or attributes from the pre-processed image.**
    a. Noise Reduction
    b. Image Normalisation
    c. Feature Extraction
    d. Histogram Equalisation

25. **_____ identifies the boundaries between different regions in an image where there is a significant change in intensity.**
    a. Edge detection
    b. Corner detection
    c. Texture analysis
    d. Colour-based feature extraction

_____

Glimpses of Python Revision Tour -1

1. **Tokens/Lexical Unit:** An individual unit of the program.

2. **Types of Tokens:** **(i)** Identifier **(ii)** Keywords **(iii)** Literals **(iv)** Operators **(v)**Punctuators.

3. **Identifiers:** It is a name given to variable, functions and class etc…

4. **Keywords: Keywords are reserved words**, which serves for special purpose in python.

5. **Literals:** Literals are data items whose value cannot be changed.

6. **Types of Literals:**

(i) Numeric Literals:

Integers		**Float**		**Complex**	
valid	**invalid**	**valid**	**invalid**	**valid**	**invalid**
a=10	s=**0**3458	a=3.25		k=3+2j	j=3+2**i**

(ii) String Literal:(i) Single string (ii) Multi string

(iii)Boolean Literal:

valid	**invalid**
k=True	J=true
S=False	F=false

(iv)Special Literal:None is called special literal in python.

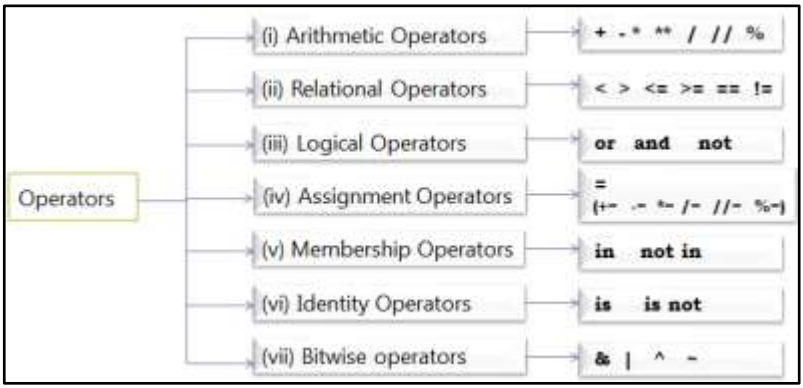
It indicates**absence of value**.

(v)Literal Collections: String, List, Tuple and Dictionary.

7. Operators: Operators are symbols which perform various mathematical or logical operations on operands.

8. Categories of Operators:(i) Unaryoperator-> Ex: S=not 54
(ii) Binary operator -> Ex: E=2+3

9. Types of operators: Seven types of operators are

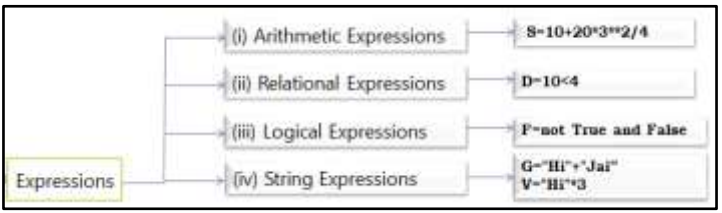


10. Variable and Assignments:

Ex 1	**Ex 2**	**Ex 3**	**Ex 4**
A=10	A=10,56,73 (tuple)	a=b=c=10 (Assigning same value to multiple variables)	G,J,L=True,56,87 (Assigning multiple values to multiple variables)

11.Expressions: An expression is a combination of operators, literals and variables.

12.Types of Expressions:



12. Operator Precedence:

Operators	Associativity
() Highest precedence	Left - Right
**	Right - Left
+x , -x, ~x	Left - Right
*, /, //, %	Left - Right
+, -	Left - Right
<<, >>	Left - Right
&	Left - Right
^	Left - Right
|	Left - Right
Is, is not, in, not in, <, <=, >, >=, ==, !=	Left - Right
Not x	Left - Right
And	Left - Right
Or	Left - Right
If else	Left - Right
Lambda	Left - Right
=, +=, -=, *=, /= Lowest Precedence	Right - Left

13. Comment Lines:

(i) Single line comment Line – Starts with **#**

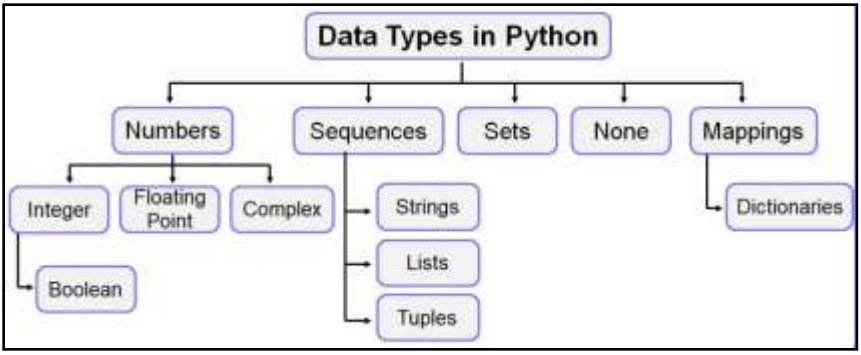
(ii) Multi line comment Line – Starts with'''(Triple-Quotes)

14. Escape Sequence:

Code	Result/Output	Description
\'	Single Quote	Add single quote with in a String
\\	Backslash	Insert single Back Slash
\n	New Line	\n takes the cursor to first position of a new line
\r	Carriage Return	\r takes the cursor to the first position of the same line
\t	Tab	\t add spaces of 8 characters
\b	Backspace	\b takes the cursor one position backward
\f	Form Feed	Form Feed is page breaking ASCII control character
\ooo	Octal value	Octal value
\xhh	Hex value	Hex value

15. Data Type: It specifies what type of data a variable going to hold in its memory.

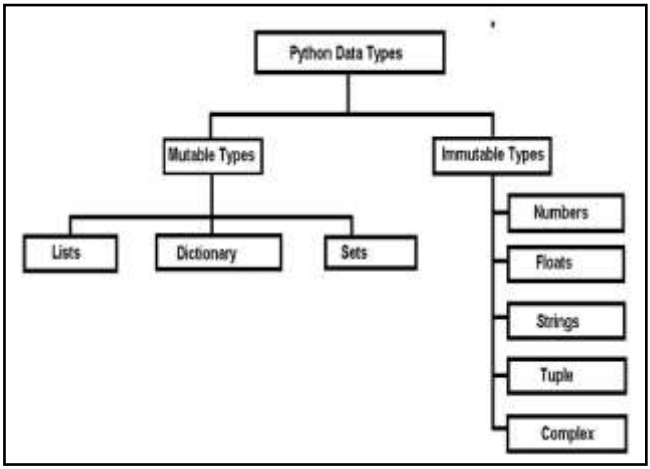
16. Types of Datatype:



17. Mutable and Immutable Types:

(i) Mutable: Objects whose value can change are said to be mutable.

(ii) Immutable: Objects whose value is unchangeable once they are created are called immutable.

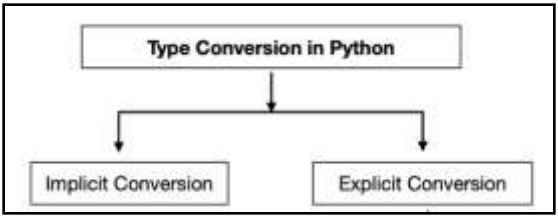


18. id() – Used to get address of the variable.

type() – Used to say the type of the variable/object

19. Type Conversion:
(OR)
Type Casting:

Type conversion is the process of converting a data type into another data type.



Implicit Conversion	Explicit Conversion
(i) It is performed by the interpreter.	(i) It is performed by the user by explicitly using type conversion functions.
(ii) It is also known as **"Coercion"**	(ii) It is also known as **"Type casting"**
(iii) **Example:** A=10 B=10.5 C=A+B **#Implicit** print(C) O/P: **20.5**	(iii) **Example:** A=10 B=10.5 C=int(A+B) **# Explicit** print(C) O/P: **20**

20. Type conversion functions:

From/To	int	Flo	Comp	Bool	String	List	Tup	Dic
int()	-	Y	N	Y	Y (int)	N	N	N
float()	Y	-	N	Y	Y(num)	N	N	N
complex()	Y	Y	-	Y	Y	N	N	N
bool()	Y	Y	Y	-	Y(All)	Y	Y	Y
str()	Y	Y	Y	Y	-	Y	Y	Y
list()	N	N	N	N	Y	-	Y	Y
tuple()	N	N	N	N	Y	Y	-	Y
dict()	N	N	N	N	N	Y (Nested)	Y (Nested)	-

21 .Control Statements:

Statements		Example
Selection	if	if 5>6: print("Hi")

	if – else	if 5>6:
		print("Hi")
		else:
		print("Hello")

	if-elif-else	if 4>6:
		print("Ji")
		elif 10>5:
		print("Hello")
		elif 7:
		print("Bye")
		else:
		print("Finished")

	Nested if elif else	a=10
		if a>1:
		if a>5:
		print("Hi")
		elif a%2==0:
		print("hello")
		elif a%3==0:
		print("K")

Looping	while (Condition Loop)	a=1 while a<=10: print(a) a=a+2

	for
	(Counting Loop)
		for i in range(5):
		print(i)
		
		for j in [1,54,42,53]:
		print(j)

Jump	break	for I in range(1,10,2):
		if I==6:
		break
		print(I)

	continue	for I in range(1,10,2):
		if I==6:
		continue
		print(I)

	pass	for I in range(1,10,2): **pass**

<table>
<tr><td rowspan="2">Nested Loop</td><td rowspan="2"></td><td>i=0
while i<=10:
j=0
while j<=3:
if j==2:
break
print(i,j)</td></tr>
<tr><td>for i in ranage(10):
for j in range(5):
if j==2:
break
print(i,j)</td></tr>
<tr><td>Loop with else</td><td>Working:
i. Whenever the condition becomes false in the beginning itself.</td><td>i=10
while i>1:
print(i)
else:
print("Hi")

O/P: Hi</td></tr>
<tr><td rowspan="2"></td><td rowspan="2">ii. Whenever the loop finished its iteration.

<u>Not Working:</u>
If we use break in loop, then that time else will not work</td><td>for I in range(2):
print(I,end=' ')
else:
print("Hello")

O/P:
0 1 2
Hello</td></tr>
<tr><td>for I in range(4):
if I==3:
break
print(i)

else:
print("Hello")

O/P:
0
1
2</td></tr>
</table>

22. Mathematical Functions (import math)

FUNTION	DESCRIPTION	EXAMPLE	OUTPUT
pow(x, y)	Return the x to the power y value.	>>> math.pow(5, 8) >>> pow(5,-2)	390625.0 0.04
sqrt(x)	Finds the square root of x	math.sqrt(400)	20.0
ceil(x)	Returns the smallest integer, greater or equal to the number x.	>>> math.ceil(23.56) >>> math.ceil(-1.5)	24 1
floor(x)	Returns the largest integer, less or equal to the number x.	>>> math.floor(23.56) >>> math.floor(-1.5)	23 2
abs(x)	It returns the absolute value and remove the negative sign of a number.	>>> abs(-4)	4
fabs(x)	Returns the absolute value of x.	math.fabs(-96)	96.0
factorial (x)	Returns factorial of x. where x ≥ 0	math.factorial(5)	120
exp(x)	Finds xe, where e = 2.718281	math.exp(5)	148.4110
log (x[, base])	Returns the Log of x, where base is given. The default base is e	math.log(625, 5)	4.0
log2(x)	Returns the Log of x, where base is 2	math.log2(1024)	10.0
log10(x)	Returns the Log of x, where base is 10	math.log10(1024)	3.0102
sin(x)	Return the sine of x in radians	math.sin(math.radians (60))	0.8660
cos(x)	Return the cosine of x in radians	math.cos(math.pi))	-1.0
tan(x)	Return the tangent of x in radians	math.tan(math.pi/2))	1.63e+16
degrees(x)	Convert angle x from radian to degrees	math.degrees(8.90)	509.93
radians(x)	Convert angle x from degrees to radian	math.radians(180)	3.14193

23. random module(import random)

(i) random() **(ii) randrange(start,stop,step)**

(iii) randint(start,stop) # Start & Stop values are included

24. Statistics module(import statistics)

(i) mean() **(ii) median()** **(iii) mode**

PRACTICE QUESTIONS
STATE TRUE OR FALSE

1.	Python is a low level language.
2.	Python is a free source language.
3.	Python converts low level language to high level language.
4.	Python is a compiler.
5.	Python is case sensitive language.
6.	Python was named after famous BBC comedy show namely Monty Python's Flying Circus.
7.	Python is not a Cross-platform Language.
8.	All identifiers in Python are in lower case.
9.(i)	An identifier is a user defined name given to a variable or a constant in a program.
9.(ii)	Python does not allows same variable to hold different data literals / data types.
10.	Operators with the same precedence are evaluated in right to left manner.
11.	Interactive mode is used when a user wants to run a single line or one block of code.
12.	Script mode is used when the user is working with more than one single code or a block of code.
13.	In Python, a variable may be assigned a value of one type, and then later assigned a value of a different type.
14.	In Python, a variable must be declared before it is assigned a value.
15.	Variable names can be of any length.
16.	the complement operator inverts the value of each bit of the operand
17.	print(int(6>7-6-7*4)) will print boolean value.
18.	Logical operator not has highest precedence among all the logical operators.
19.	"is" is a membership operator in python.
20.	Following code will produce True as output: x=10>5>1 and -3<-2<-1 print(x)
21.	The value of expression 3/5*(7-2) and 3/(5*(7-2)) issame.
22.	The expression 4**3**2 is evaluated as (4**3)**2
23.	() have higher precedence that any other operator.
24.	print() always inserts a newline after each output.
25.	>>> 2*4+36/2-9 In the above expression 36/2 will be evaluated first by python.
26.	When syntax error is encountered, Python displays the name of the error and a small description about the error.

27.	"In Python, data type of a variable depends on its value"
28.	"Python identifiers are dynamically typed."
29.	(i) -88.0 is the output of the print(3-10**2+99/11) (ii) range( ) is also a module function
30.	"Comments in Python begin with a "$" symbol."
	ASSERTION & REASON
1.	**A:**It is interpreted language. **R:** Python programs are executed by an interpreter.
2.	**A:** Python is portable and platform independent. **R:**Python program can run on various operating systems and hardware platforms.
3.	**A:** Python is case-sensitive. **R:**Python does not use indentation for blocks and nested blocks.
4.	**A:** Python program is executed line by line. **R:** Python is compiled language.
5.	**A:** Python is an object oriented language **R:** Python is a cross platform language
6.	**A:** Python is case-sensitive. **R:** NUMBER and number are not same in Python
7.	**A:** Python is a high-level object-orientedprogramming language. **R:** It can run on different platforms like Windows,Linux, Unix, and Macintosh.
8.	**A:** An identifier cannot have the same name as of a keyword. **R:** Python interpreter will not be able to differentiate Between a keyword and an identifier having the same name as of a keyword.
9.	>>>print('Good'+' Morning') #Output :Goodmorning **A :** Incorrect Output **R:** There is a syntax error
10.	**A:** In Python comments are interpreted and are shown on the output screen. **R:** Single line comments in python starts with # character
11.	**A:** Python uses the concept of L-value andR-value, that is derived from the typical mode of evaluation on the left and right side of an assignment statement **R:** name = 'Raj' In the above code the value 'Raj' is fetched (Rvalue) and stored in the variable named – name (L value)
12.	**A :** Age=18 print(age) **R :** Variables are case sensitive

13.	**A:**>>> print(type((3 + 33)<-(-4 - 44))) **R :** As output is True which is a boolean value
14.	num1=input("enter a number") print(num1+2) **A:** The above code will give error message when executed. **R:**input() returns a string datatype. We cannot add stringdatatype with a numeric datatype. So, performingarithmetic operation on it will result in error.
15.	var1=10 var1="hello" **A:** The above code is invalid. We cannot assign adata of different data type to an existing variable. **R:** Python supports implicit type casting. So it is possible to assign a data of different data type to anexisting variable.
16.	**A:** You will get an error if you use doublequotes inside a string that is surrounded by doublequotes: **txt = "We are the so-called "Vikings" from the north."** **R:** To fix this problem, use the escapecharacter **\"**:
17.	**A:** Variables whose values can be changed afterthey are created and assigned are called immutable. **R:** When an attempt is made to update the value ofan immutable variable, the old variable is destroyed and a new variable is created by the same name in memory.
18.	**A:**To do arithmetic python usesarithmetic(+,*,//,**, -, / ,%) **R:**Each of these operators is a binary operator
19.	**A:** The relational operator determine therelation among different operand **R:**It returns the boolean value
20.	**A:**not has a lower priority than non-Booleanoperators **R:** So not a==b is interpreted as not(a==b)
21.	**A:**The ** operators is evaluated from right to left **R:**All operators are left associative
22.	**A:** for the given expression v1='1' v2= 1 v3= v1==v2 **#value of v3 is False** **R:** Integer value cannot be compared with string value.
23.	**A:** following given expression will result into TypeError

	str1="ABC" v1=[2] str3=str1*v1 **R:** operator '*' cannot be applied on string
24.	**A:**int('A') The above statement will result into error **R:** 'A' is not recognised by Python
25.	**A:** a=9, b=int(9.2) Both a and b have same value **R:**b is converted to integer explicitly
26.	**A:** In an expression, associativity is the solution to the order of evaluation of those operators which clashes due to same precedence. **R:** Operators in an expression may have equal precedence due to which the order of evaluation cannot be decided just by precedence.
27.	**A:**SyntaxError: Missing parentheses in call to 'print'. **R:**SyntaxError: It is raised when there is an error in the syntax of the Python code.
28.	**A:** NameError: name 'X' is not defined **R:**NameError: It is raised when the requested module definition is not found.
29.	**A:**ZeroDivisionError: division by zero **R:**ZeroDivisionError: It is raised when the denominator in a division operation is zero.
30.	**A:**TypeError: can only concatenate str (not "int") to str **R:**TypeError: It is raised when an operator is supplied with a value of incorrect data type.
31.	**A:** An example of an infinite loop is : while(1): **R:** A loop that continues repeating without aterminating (ending) condition is an infinite loop.
32.	**A:** The statements within the body of for loopare executed till the range of values is exhausted. **R:** for loop cannot be nested.

33.	Analyse the following code:
	for i in range(1,4):
	for j in range (1,i+1):
	print(j,end=' ')
	print()
	A: output is
	1
	12
	123
	R: Here, range function will generate value 1,2,3 in the outer loop and the inner loop will run for each value of "i" used in outer loop.

34.	**A:** Python provides two looping constructs for and while. The for is a counting loop and while is a conditional loop. **R:** The while is a conditional loop as we check the condition first, if it is satisfied then only we can get inside the while. In case of for it depends upon the counting statement of index.
35.	**A:** for loop in Python makes the loop easy to calculate factorial of a number **R:** While loop is an indefinite iteration that is used when a loop repeats unknown number of times and end when some condition is met.
36.	**A:** range(0,5) will produce list as [0,1,2,3,4] **R:**These are the numbers in arithmeticprogression(a.p.) that begins with lower limit 0 andgoes up till upper limit -1.
37.	**A:** To print the sum of following series 1 + 3 + 5…….n. Ravi used the range function in for loop asfollows :range(1,n+1,2) # 3 parameters **R:** In range function first parameter is start value,secondparameter is stop value & the third parameter isstep value.
38.	x = 0 for i in range(3,9,3): x = x * 10 + i print(x) **A:** The output of the above code will be 9. **R:**The loop will run for 2 times.

39.	for i in range(1, 6):
	for j in range(1, i):
	print("*", end=" ")
	print()
	A: In a nested loop, the inner loop must terminate before the outer loop.
	R:The above program will throw an error.

40.	**A:** break statement terminates the loop. **R:** The else clause of a Python loop executeswhen the loop continues normally.
41.	**A:**break statement appears in a nested loop. **R:**If the break statement is inside the inner loopthen it will not terminate the inner loop then it willterminate the outer loop only

42.	**A:** break statement terminates the loop it lieswithin. **R:** continue statement forces the next iteration ofthe loop to take place, skipping any code in between.
43.	**A:** The math.pow(2,4)gives the output: 16.0 **R:** The math.pow() method receives two float arguments, raise the first to the second and return the result.

OBJECTIVE TYPE QUESTIONS (MCQ)

1.	Python uses ____ to convert its instructions intomachine language. (a)Interpreter (b)Compiler (c)Both of the above (d)None of the above
2.	Who developed the Python language? (a) Zim Den (b)Wick van Rossum (c)Guido Van Rossum (d)NieneStom
3.	IDLE stands for _____ (a) Integrated Development Learning (b) Integrated Development Learning Environment (c) Intelligent Development Learning Environment (d) None of the above
4.	Python interpreter executes .....statement (Command) at a time. (a) Two (b) Three (c) One (d) All command
5.	Which of the following is not the feature of pythonlanguage? (a) Python is proprietary software. (b)Python is not case-sensitive. (c) Python uses brackets for blocks and nested blocks. (d) All of the above
6.	By default, the Python scripts are saved with_____ extension. (a) .pyp (b).pys (c).py (d)None of the above
7.	What is the maximum possible length of an identifier in python? (a) 16 (b) 32 (c) 64 (d) None of these
8.	>>> print("I" + "am" + "in" + "school") display (a) I am in school(b)I Am In School (c)Iaminschool(d)iaminschool
9.	Which of the following statement is correctsyntactically? (a) print(“Hello” , sep == ‘@’ , end =' ') (b)print(“Hello” , sep = ‘@’ , end = ' ') (c)Print(“Hello” , sep = ‘@’ , end = ' ') (d)print(“Hello” , sep = ‘@’ , end = ' '
10.	Which of the following is not a keyword in python? (a) eval (b) assert (c) nonlocal (d) pass
11.	Which of the following is not a valid declaration?

	(a) S=12 (b) V="J" (c) F=32.4 (d) H=0254
12.	Evaluate the following expression: **>>> not True or not False and False** (a) True (b) False (c) None (d) Will generate an Error
13.	All keywords in python except TRUE and FALSE are in ____? (a) Lower case (b) Upper case (c) Capitalized (d) None of the above
14.	Find the invalid identifier from the following (a) sub%marks (b) age (c) _subname_ (d) subject1
15.	Which of the following expressions is an example of type casting? (a) 4.0+float(6) (b) 5.3+6.3 (c) 5.0+3 (d) None of these
16.	Which of the following is an invalid identifier? (a) CS_class_XII (b) csclass12 (c) _csclass12 (d) 12CS
17.	The input() function always returns a value of ……..type. a) Integer b) float c) string d) Complex
18.	To include non-graphic characters in python, which of the following is used? a. Special Literals b. Boolean Literals c. Escape Character Sequence d. Special Literal – None
19.	Which of the following cannot be a variable name? (a) _init_ (b) in (c) it (d) on
20.	Which is valid keyword? (a) Int (b) WHILE (c) While (d) if
21.	Predict the output of the following: (i) >>>print(10 or 40) (ii) >>> print(22.0//5)
22.	Which of the following is an invalid operator in Python? (a) - (b) //= (c) in (d) =%
23.	Which of the following operators is the correct option for power(a,b)? (a) a ^ b (b) a **b (c) a ^ ^ b (d) a ^ *b
24.	Which of the characters is used in python to make a single line comment? (a)/ (b) // (c) # (d)!
25.	Which of the following is not a core data type in python? (a)List (b) Dictionary (c) Tuple (d) Class
26.	Which of the following has the highest precedence in python? (a)Exponential (b) Addition (c) Parenthesis (d) Division

27.	What is math.factorial(4.0)? (a) 20 (b) 24 (c) 16 (d) 64
28.	Identify the invalid variable name from the following. Adhar@Number, none, 70outofseventy, mutable
29.	Which of the following belongs to complex datatype (a) -12+2k (b) 4.0 (c) 3+4J (d) -2.05I
30.	None is a special data type with a single value. It is used to signify the absence of value in a situation (a) TRUE (b) FALSE (c) NONE (d) NULL
31.	If x=3.123, then int(x) will give ? (a) 3.1 (b) 0 (c) 1 (d) 3
32.	To execute the following code in Python, Which module need to be imported? **>>>print(_____.mean([1,2,3])**
33.	Find the invalid identifier from the following (a) Marks@12 (b) string_12 (c)_bonus (d)First_Name
34.	Find the invalid identifier from the following (a) KS_Jpr (b) false (c) 3rdPlace (d) _rank
35.	Find the valid identifier from the following: (a) Tot$balance (b) TRUE (c) 4thdata (d) break
36.	Which one of the following is False regarding data types in Python? (a) In python, explicit data type conversion ispossible (b) Mutable data types are those that can bechanged. (c) Immutable data types are those that cannot bechanged. (d) None of the above
37.	Which statement will give the output as : True from the following : a) >>>not -5 b) >>>not 5 c) >>>not 0 d) >>>not(5-1)
38.	Evaluate the following expression: **1+(2-3)*4**5//6** (a) -171 (b) 172 (c) -170 (d) 170
39.	The correct output of the given expression is: **True and not False or False** (a) False (b) True (c) None (d) Null
40.	What will the following expression be evaluated to in Python? print(6*3 / 4**2//5-8) (a) -10 (b) 8.0 (c) 10.0 (d) -8.0
41.	Evaluate the following expressions: **>>>(not True) and False or True** (a) True (b) False (c) None (d) NULL
42.	**>>> 16 // (4 + 2) * 5 + 2**3 * 4** (a) 42 (b) 46 (c) 18 (d) 32

43.	Evaluate the following expression: **True and False or Not True** (a) True (b) False (c) NONE (d) NULL
44.	The below given expression will evaluate to **22//5+2**2**3%5** (a)5 (b) 10 (c) 15 (d) 20
45.	Which of the following is not a valid identifier name in Python? a) First_Name b) _Area c) 2nd_num d) While
46.	Evaluate the following Python expression **print(12*(3%4)//2+6)** (a)12 (b)24 (c) 10 (d) 14
47.	Give the output of the following code: >>>import math >>>math.ceil(1.03)+math.floor(1.03) a) 3 b) -3.0 c) 3.0 d) None of the above
48.	>>>5 == True and not 0 or False (a) True (b) False (c) NONE (d) NULL
49.	Predict the output of the following: **from math import*** **A=5.6** **print(floor(A),ceil(A))** (a) 5 6 (b) 6 5 (c) -5 -6 (d) -6 -5
50.	Predict the output of the following code: **import math** **print(math.fabs-10))** (a) 1 (b) -10 (c) -10.0 (d) 10
51.	Which of the following function is used to know the data type of a variable in Python? (a) datatype() (b) typeof() (c) type() (d) vartype()
52.	Identify the invalid Python statement from the following. (a) _b=1 (b) b1= 1 (c) b_=1 (d) 1 = _b
53.	A=100 B=A Following the execution of above statements, python has Created how many objects and how many references? (a) One object Two reference (b) One object One reference (c) Two object Two reference (d) Two object One reference
54.	What is the output of the following code? **a,b=8/4/2, 8/(4/2)** **print(a,b)** (a) Syntax error (b) 1.0,4.0 (c) 4.0,4.0 (d) 4,4

55.	Predict output for following code **v1= True** **v2=1** **print(v1==v2, v1 is v2)** (a) True False (b) False True (c) True True (d) False False
56.	Find output for following given program **a=10** **b=20** **c=1** **print(a !=b and not c)** (a) 10 (b) 20 (c) True (d) False

57.	Find output of following given program :
	str1_ = "Aeiou"
	str2_ = "Machine learning has no alternative"
	for i in str1_:
	if i not in str2_:
	print(i,end='')
	(a) Au (b) ou (c) Syntax Error (d) value Error

58.	Find output for following given code **a=12** **print(not(a>=0 and a<=10))** (a) True (b) False (c) 0 (d)1
59.	What will be value of diff ? **c1='A'** **c2='a'** **diff= ord(c1)-ord(c2)** **print(diff)** (a) Error : unsupported operator '-' (b) 32 (c)-32 (d)0
60.	What will be the output after the following statements? x = 27 y = 9 while x < 30 and y < 15: x = x + 1 y = y + 1 print(x,y) (a) 26 11 (b) 25 11 (c) 30 12 (d) 26 10
61.	What output following program will produce **v1='1'** **v2= 1** **v3=v1==v2** (a) Type Error (b) Value Error (c)True will be assigned to v3 (d)False will be assigned to v3

62.	Which of the following operators has highest precedence: +,-,/,*,%,<<,>>,( ),** (a) ** (b) ( ) (c) % (d)-
63.	Which of the following results in an error? (a) float('12') (b) int('12') (c) float('12.5') (d) int('12.5')
64.	Which of the following is an invalid statement? (a) xyz=1,000,000 (b) x y z = 100 200 300 (c) x,y,z=100,200,300 (d) x=y=z=1,000,000
65.	Which of the following defines **SyntaxError?** (a) It is raised when the file specified in a program statement cannot be opened. (b) It is raised when there is an error in the syntax of the Python code. (c) It is raised when the requested module definition is not found. (d) It is raised due to incorrect indentation in the program code.
66.	Which of the following defines **ValueError?** (a) It is raised when the file specified in a program statement cannot be opened. (b) It is raised when there is an error in the syntax of the Python code. (c) It is raised when a built-in method or operation receives an argument that has the right data type but Mismatched or inappropriate values. (d) It is raised due to incorrect indentation in the program code.
67.	It is raised when the denominator in a division operation is zero. (a) IndexError (b) IndentationError c) ZeroDivisionError (d) TypeError
68.	It is raised when the index or subscript in a sequence is out of range. (a) IndexError (b) IndentationError (c) ZeroDivisionError (d) TypeError
69.	It is raised when a local or global variable name is not defined. (a) IndexError (b) IndentationError (c) ZeroDivisionError (d) NameError
70.	It is raised due to incorrect indentation in the program code. (a) IndexError (b) IndentationError (c) ZeroDivisionError (d) NameError

71.	It is raised when an operator is supplied with a value of incorrect data type. (a) IndexError (b) TypeError (c) ZeroDivisionError (d) NameError
72.	It is raised when the result of a calculation exceeds the maximum limit for numeric data type. (a) OverFlowError (b) TypeError (c) ZeroDivisionError (d) NameError
73.	IndentationError is a type of: (a) SyntaxError (b) Logical Error (c) Runtime Error (d) Other
74.	Which of following is not a decision-making statement? (a) if-elif statement (b) for statement (c) if -else statement (d) if statement
75.	In a Python program, a control structure: (a) Defines program-specific data structures (b) Directs the order of execution of the statements in the program (c) Dictates what happens before the program starts and after it terminates (d) None of the above
76.	Which one of the following is a valid Python if statement? (a) if a>=9: (b) if (a>=9) (c) if (a=>9) (d) if a>=9
77.	**if 4+5==10:** **print("TRUE")** **else:** **print("false")** **print ("True")** (a) False (b) True (c) false (d) None of these
78.	Predict the output of the following code: **X=3** **if x>2 or x<5 and x==6:** **print("ok")** **else:** **print("no output")** (a) ok (b) okok (c) no output (d) none of above
80.	identify one possible output of this code out of the following options: **from random import*** **Low=randint(2,3)** **High=randrange(5,7)** **for N in range(Low,High):** **print(N,end=' ')** (a) 3 4 5 (b) 2 3 (c) 4 5 (d) 3 4 5 6

81. Given the nested if-else below, what will be the value x when the source code executed successfully:

```
x=0
a=5
b=5
if a>0:
   if b<0:
      x=x+5
   elif a>5:
       x=x+4
   else:
       x=x+3
else:
      x=x+2
print (x)
```

(a) 0 (b) 4

(c) 2 (d) 3

82. Which of the following is False regarding loops in Python?
(a) Loops are used to perform certain tasks repeatedly.
(b) while loop is used when multiple statements are to executed repeatedly until the given condition becomes true.
(c) while loop is used when multiple statements are to executed repeatedly until the given condition becomes false
(d) for loop can be used to iterate through the elements of lists.

83. The for loop in Python is an _____
(a) Entry Controlled Loop (b) Exit Controlled Loop
(c) Both of the above (d) None of the above

84. What abandons the current iteration of the loop?
(a) continue (b) break (c) stop (d) infinite

85. The following code contains an infinite loop. Which is the best explanation for why the loop does not terminate?

```
n = 10
answer = 1
while n > 0:
        answer = answer + n
n = n + 1
print(answer)
```

(a) n starts at 10 and is incremented by 1 each time through the loop, so it will always be positive.
(b) Answer starts at 1 and is incremented by n each time, so it will always be positive.
(c) You cannot compare n to 0 in the while loop. You must Compare it to another variable.
(d) In the while loop body, we must set n to False, and

	this Code does not do that.
86.	What will the following code print? **for i in range(1,4):** **for j in range(1,4):** **print(i, j, end=' ')** (a) 1 1 2 2 3 3 (b) 1 2 3 1 2 3 1 2 3 (c) 1 1 1 2 1 3 2 1 2 2 2 3 3 1 3 2 3 3 (d) 1 1 2 1 3 1 2 1 2 2 2 3 3 1 3 2 3 3
87.	When does the else statement written after loop executes? (a) When break statement is executed in the loop (b) When loop condition becomes false (c) Else statement is always executed (d) None of the above
88.	What will be the output of the following Python code? **for x in range(1, 4):** **for y in range(2, 5):** **if x * y > 6:** **break** **print(x*y, end="#")** (a) 2#3#4#4#6#8#6#9#12# (b) 2#3#4#5#4#6#6# (c) 2#3#4#4#6#6# (d) 2#3#4#6

89.	Examine the given Python program and select the purpose of the program from the following options:
	N=int(input("Enter the number"))
	for i in range(2,N):
	if (N%i==0):
	print(i)
	(a) To display the proper factors(excluding 1 and the number N itself)
	(b) To check whether N is a prime or Not
	(c) To calculate the sum of factors of N
	(d) To display all prime factors of the Number N.

90.	If A=rndom.randint(B,C) assigns a random value between 1 and 6(both inclusive) to the identifier A, what should be the values of B and C, if all required modules have already been imported? (a) B=0, C=6 (b) B=0,C=7 (c) B=1,C=7 (d) B=1,C=6
91.	Predict the output of the following code: **import statistics as S** **D=[4,4,1,2,4]** **print(S.mean(D),S.mode(D))** (a) 1 4 (b) 4 1 (c) 3 4 (d) 4 3

92.	The continue statement is used: (a) To pass the control to the next iterative statement (b) To come out from the iteration (c) To break the execution and passes the control to else statement (d) To terminate the loop
93.	Common types of exception in python are: (a) Syntax Error (b) Zero division error (c) (a) and (b) (d) None of these
94.	Which of the following is an incorrect logical operator in python? (a) not (b) in (c) or (d) and
95.	Which of the following is not a function/method of the random module in python? (a) randfloat( ) (b) randint( ) (c) random( ) (d) randrange( )
96.	Which of the following symbols are used for comments in Python? (a) // (b) & (c) /**/ (d) #
97.	print (id(x)) will print_____. (a) Value of x (b) Datatype of x (c) Size of x (d) Memory address of x
98.	What will the following expression be evaluated to in Python? >>> print((4.00/(2.0+2.0))) a)Error b)1.0 c)1.00 d)1
99.	Which of the following datatype in python is used to represent any real number : (a) int (b) complex (c) float (d) bool
100	>>> print((- 33 // 13) * (35 % -2)* 15/3) (a) 10.0 (b) -15.0 (c) 15.0 (d) -10.0
101	Which of the following statement(s) would give an error afterexecuting the following code? x= int("Enter the Value of x:")) #Statement 1 for y in range[0,21]: #Statement 2 if x==y: #Statement 3 print (x+y) #Statement 4 else: #Statement 5 print (x-y) # Statement 6 (a) Statement 4 (b) Statement 5 (c) Statement 4 & 6 (d) Statement 1 & 2

	2 – MARKS
1.	Evaluate the following expression: False and bool(15/5*10/2+1)
2.	If given A=2,B=1,C=3, What will be the output of following expressions: (i) print((A>B) and (B>C) or(C>A)) (ii) print(A**B**C)
3.	Write the output of the code given below: p=10 q=20 p*=q//3 p=q**2 q+=p print(p,q)
4.	Evaluate the following expressions: (a) 5 // 10 * 9 % 3 ** 8 + 8 – 4 (b) 65 > 55 or not 8 < 5 and 0 != 55
5.	Fill in the blanks to execute loop from 10 to 100 and 10 to 1 (i)for i in range(_____): print(i) (ii)for i in range(_____): print(i)
6.	Evaluate the following: >>> **print(15.0/4+(8*3.0))**

7.	Sona has written the following code to check whether number is divisible by 3. She could not run the code successfully. Rewrite the code and underline each correction done in the code.
	x=10
	for I range in (a)
	if i%3=0:
	print(I)
	else
	pass

8.	Rewrite the following code in Python after removing all syntax error(s). Underline each correction done in the code.
	Value=30
	for VAL in range(0,Value)
	if val%4==0:
	print (VAL*4)
	Elseif val%5==0:
	print (VAL+3)
	else
	print(VAL+10)

9.	Mona has written a code to input a positive integer and display all its even factors in descending order. Her code is having errors. Rewrite the correctcode and underline the corrections made. **n=input("Enter a positive integer: ")** **for i in range(n):** **if i%2:** **if n%i==0:** **print(i,end=' ')**
10.	Find error in the following code(if any) and correct code by rewriting code and underline thecorrection;- x= int("Enter value of x:") for in range [0,10]: if x=y print(x + y) else: print(x-y)

11.	Mithilesh has written a code to input a number and evaluate its factorial and then finallyprint the result in the format : "The factorial of the <number> is <factorial value>" His codeis having errors. Rewrite the correct code and underline the corrections made.
	f = 0
	num = input("Enter a number:")
	n = num
	while num> 1:
	f = f * num
	num -= 1
	else:
	print("The factorial of : ", n , "is" , f)

12.	Rewrite the following code after removing the syntactical error(if any).Underline each correction: X=input("Enter a Number") If x % 2 =0: for i range (2*x): print i loop else: print "#"
13.	What possible outputs are expected to be displayed on screen at the time of execution of the program from the following code? Also specify the maximum value that can be assigned to each of the variables L and U. import random Arr=[10,30,40,50,70,90,100] L=random.randrange(1,3)

	U=random.randrange(3,6) for i in range(L,U+1): print(Arr[i],"@",end="") (i) 40 @50 @ (ii) 10 @50 @70 @90 @ (iii) 40 @50 @70 @90 @ (iv) 40 @100 @

14.	Rewrite the following Python program after removing all the syntactical errors (if any), underlining each correction:
	x=input("Enter a number")
	if x % 2=0:
	print x, "is even"
	else if x<0:
	print x, "should be positive"
	else;
	print x "is odd"

15.	(i)Find the output generated by the following code: **a=5** **b=10** **a+=a+b** **b*=a+b** **print(a,b)**
	(ii)Answer the following questions from the following code: **num_list=["One","Two","Three","Four"]** **for c in num_list:** **print(c)** (i) What will be the output of the above code? (ii) How many times the loop executed?

16.	**Predict the output of the following code:**
	num=123
	f=0
	s=0
	while(num > 3):
	rem = num % 100
	if(rem % 2 != 0):
	f += rem
	else:
	s+=rem
	num /=100
	print(f-s)

17.	Evaluate the following expressions: a) 7*3+4**2//5-8 b) 7>5 and 8>20 or not 12>4

18.	Predict the output of the following:
	for i in range(4):
	if i==4:
	break
	else:
	print(i)
	else:
	print("Welcome")

19.	Anu wrote the code that, prints the sum of numbers between 1 and the number, for each number till 10.She could not get proper output.
	i = 1
	while (i <= 10): **# For every number i from 1 to 10**
	sum = 0 **# Set sum to 0**
	for x in range(1,i+1):
	sum += x **# Add every number from 1 to i**
	print(i, sum) **# print the result**
	a) What is the error you have identified in this code?
	b) Rewrite the code by underlining the correction/s.

20.	Evaluate the following expressions: a) 6+7*4+2**3//5-8 b) 8<=20 and 11
21.	Write the difference between break and continue.
22.	Predict the output of the following: X = 3 Y = 5 Z = -2 X *= Y + Z Y -= X * 2 + Y Z += X + Y print(X, Y, Z)
23.	Predict the output of the following code: X = 3 Y = 2 Z = -5 X -= Y + Z Y //= X - Z Z *= X + Y print(X, Y, Z)
24.	Predict the output of the following: M, N, O = 3, 8, 12 N, O, M = O+2, M*3, N-5. print(N,O,M)
25.	V, W, X = 20, 15, 10 W, V, X = X-2, V+3, W*2. print(V,X,W)

26.	**Predict the output of the following:**
	a=None
	b=None
	x=4
	for i in range(2,x//2):
	  if x%i==0:
	  if a is None:
	  a=i
	  else:
	  b=i
	  break
	print(a,b)

27.	Predict the output of the following:
	for i in range(1, 15, 2):
	 temp = i
	 if i%3==0:
	  temp = i+1
	 elif i%5==0:
	  continue
	 elif i==11:
	  break
	 print(temp, end='$')

28.	Predict the output of the following:
	P,S=1,0
	for X in range(-5,15,5):
	  P*=X
	  S+=X
	  if S==0:
	  break
	else:
	  print(P, "#", S)

29.	Predict the output of the following:
	for x in range(1, 4):
	  for y in range(2, 5):
	  if x * y > 6:
	  break
	  print(x*y, end="#")

30.	N=5
	C=1
	while (C<8):
	  if(C==3 or C==5):
	  C+=1
	  continue
	  print(C,'*',N,'=',C*N)
	  C+=1

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