

ANSWER KEY OF MOCK TEST

PHYSICAL EDUCATION

Class – XII, CBSE Examination 2023 (Code-048)

SECTION-A

1.	(a)	2.	(a)	3.	(c)	4.	(b)	5.	(b)
6.	(a)	7.	(b)	8.	(c)	9.	(b)	10.	(b)
11.	(a)	12.	(b)	13.	(a)	14.	(d)	15.	(b)
16.	(c)	17.	(d)	18.	(b)				

SECTION-B

19. A. Increased Heart Rate

The heart rate increases with the intensity of exercise. The normal heart rate is 72 beats per minute and can rise up to 200 beats per minute. It is also observed that increase of heart rate is comparatively slow in trained persons.

B. Increased Blood Circulation

As the heart rate increases blood circulation also increases in the body to deliver the oxygen to muscles. With the result flow of blood increases to tissues or organs.

C. Increased Blood Pressure

During strenuous exercise systolic blood pressure increases, whereas diastolic blood pressure changes to a small extent.

D. Increased Stroke Volume

The volume of blood pumped during one beat is called stroke volume. The normal stroke volume is between 70 ml and 80 ml. per beat in trained male athlete. During strenuous activity, it may reach up to 160 ml. per beat.

20. Benefits of Self-Esteem

1. **Arouses positive emotions:** An athlete with positive self-esteem feels confident and remains calm and relaxed under pressure.
2. **Improve concentration:** Athletes with positive self-esteem are able to better focus on a task and exhibit better performance in competitions. If the athlete lacks self-esteem then the mind tends to worry on how to perform better. It leads to anxiety and low performance.
3. **Affects goal:** Goal setting is one of the major factors to reach performance level. People with high self-esteem tend to set challenging goals and pursue them actively. This allows the athlete to reach a goal through performing better.
4. Athletes with high self-esteem take risks more courageously, do not set too high demands on themselves and highly value themselves.

21. ADVANTAGES OF INTERVAL TRAINING METHOD

- Great success in less time.
- Easy to organize.
- Develops endurance and confidence
- Does not require specific equipment
- Less chances of fatigue.
- The progress of the player can be assessed easily.

22. **Direct injuries:** Direct injuries are caused due to impact of external forces e.g. a hockey player receiving a bruise from being struck on the face by a stick during a game. The other example is collision of two footballers.

Indirect injuries: Indirect injuries typically involve the athlete himself by damaging the soft tissues such as the ligaments, tendons or muscles. Generally sprain and strain are the examples e.g. sprinter gets hamstring strain while sprinting.

Overuse injuries: This type of injury is caused due to overuse or constant overuse of the body part e.g. tennis elbow in javelin throwers. The other example is stress fracture in athletes training for long distances. Stress fractures are caused by the constant overuse of the bones of legs in road running events.

23. 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.

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. 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).

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.

24. Forms of Vitamin B Complex

Vitamin B: Vitamin B is further grouped into following parts:

Vitamin B₁ : It is a water soluble vitamin and is a member of the Vitamin B complex. It is also known as 'thiamin' or 'aneurin'. This is concerned in a number of important metabolic processes.

Vitamin B₂ : It is a water soluble vitamin and is a member of the Vitamin B complex. It is also known as riboflavin and lactoflavin. It is necessary for cell respiration and growth.

Vitamin B₃ : It is a water soluble vitamin and is a member of the Vitamin B complex. It is also known as Niacin, Nicotinic Acid and Nicotinamide. It is produced in the body from the amino acid.

Vitamin B₅: It is a water soluble vitamin and is a member of the Vitamin B complex. It is also known as pantothenic acid. Its natural form is D-pantothenic acid. Pantothenic acid is an oil which is required by higher animals and some micro-organisms.

Vitamin B₆: It is a water soluble vitamin and is a member of the Vitamin B complex. Pyridoxine is the other name of B₆.

Vitamin B₁₂: It is a water soluble vitamin and is a member of the Vitamin B complex. It is also known as Cobalamin (due to its cobalt factor), cyanocobalamin, hydroxocobalamin. It is produced by the formation of certain micro-organisms and also found in the liver. It can be prepared synthetically.

SECTION-C

25. Strategies to make Physical Activities accessible for children with special needs

Every child is unique and their specific needs vary from individual to individual. Children with special needs need participation in physical activities to make a healthy life. Many strategies are required to make physical activities accessible for children with special needs. These are explained below:

(a) **The Environment:** It is often observed that children struggling with learning often compare themselves with others and, so, may be easily offended and discouraged. Therefore it is very essential to provide a calm, blame-free environment. The work area must be safe and quiet and free from distractions. The environment for the children with special needs should be like that the child should be able to find what he needs without asking or hunting. He should be trained to put things back, obviously, to maintain order. This type of organization allows children to work more independently, reduces distractions. All the playing area should be safe to avoid injuries.

(b) **Planning the Schedule:** Children with special needs, need every day an opportunity to engage in something they enjoy and do well. This helps them to attain a necessary balance to their struggles in the areas of weakness. All the physical activities should be planned in a way so that it aims at long-range goals. While planning it must be kept in mind that the small goals must be set which are within the child's reach.

While strategic planning it should be kept in mind that the same group of muscles should not be given activity so long that the child becomes overly fatigued or discouraged. Planning must include daily exercises. Exercise helps in developing concentration as well as the development of coordination.

(c) **Teaching Strategies:** Main aim of planning teaching strategies should always have simple commands with as few words as possible. This helps the child to follow the instructions easily. Children with special needs always try to imitate the teacher so the teacher should demonstrate the skills to be learnt.

(d) **Strategy for Physical Education Teachers:** Teaching physical education to the children with special needs must be modified accordingly. Every child with special needs must have individualized education plan. All the physical education teachers must give training to children with special needs to correct physical conditions that can be improved with exercises.

(e) **Medical Check-up:** Regular medical examination of the child is to be done to know about his physical disability. This helps the child to focus on the disability and the activity to be recommended for these children.

(f) **Communication:** Information about activity, space, resource person or any change in activity should be communicated clearly. A variety of instructional strategies such as

verbal, visual and peer teaching should be used for performing various types of physical activities so that children get an opportunity to participate in the physical activity.

- (g) **Space:** The space should be approachable for people having physical disability. The area for the physical activity should be limited. Space for activities should be disturbance free. It is always better to start with indoor space. Children with autism, may be provided specific area because they may need some time to relax.
- (h) **Equipment:** Proper equipment and trained professionals are required for children and youth with different ability levels. There are a growing number of disabled people who are interested in recreation and sports activities. Several modified devices are on offer for adapted sports. There are sports competitions involving disabled sportspersons like deaf, people with physical disability, people with intellectual disability, people supported by specially designed high level engineering equipment. All of them can use these kinds of equipment.
- (i) **Graded Activities:** In initial stage activities should be simple and based on a single action. There should be a gradual move from non-locomotor to locomotor to manipulated activities. For such activities, the level of assistance should be physical, verbal and independent. They need to help children in learning a fundamental motor skill. They could also be asked to demonstrate the skill to ensure the instructions have been understood before commencing practise and they must start practice immediately after viewing a demonstration. The activity must be performed dramatically with rhymes or songs with voice modulations.
- (j) **Social Strategies:** The child should be allowed to choose the sport of his choice. Because they are motivated when they enjoy the activity. Encourage the child to watch others. Let the child see people having fun as they play. Then start with individual training. Keep individual check and motivate them with reminder when they get distracted.
- (k) **Psychological Strategies:** Due to limited access, children with disabilities need a lot of motivation to participate in physical activity. Psychological barriers prevent participation in sports. Children with disability play sports to have fun and stay fit.

26. Carbohydrates

Carbohydrates are composed of organic compounds such as carbon, hydrogen and oxygen. They provide energy to the body.

The main sources of carbohydrates are in the following forms:

- (i) **Starch:** Starch is derived from the wheat, maize, cornflour, rice, potato, beet, etc.
- (ii) **Sugar:** They are comprised of monosaccharides and disaccharides. They can be obtained from honey, sugarcane, beet, milk, etc.
- (iii) **Cellulose:** It is a fibrous substance and is obtained from fruits, vegetables and cereals. The optimum quality of carbohydrate in a balanced diet should at least contain 60% of total energy intake. If excess carbohydrate is taken, the extra amount is stored as fat. The carbohydrates act as energy source, especially for the nervous system.

Carbohydrates are of two types:

- Simple carbohydrates: These carbohydrates contain vitamins and minerals. Sources of simple carbohydrates are fruits, low fat milk, table sugar, jam, honey etc.
- Complex carbohydrates: Complex carbohydrates are starches which contain various types of sugar molecules combined chemically to form glycogen. They are good sources of

vitamins and fibres. These carbohydrates are found in bread, cereals, vegetables, dal, rajma etc.

27. All the competitions or teams are given information about the matches through a flow chart after deciding about the type of tournament.

7 teams cyclic

$$N = 7$$

$$M = \frac{N(N-1)}{2} = \frac{7(7-1)}{2} = \frac{7(6)}{2} = \frac{42}{2} = 21$$

No. of Rounds = N = 7

No. of Byes = One

ISR	IIR	IIR	IV	V	VI	VII
7 Bye	6 Bye	5 Bye	4 Bye	3 Bye	2 Bye	1 Bye
6 1	5 7	4 6	3 5	2 4	1 3	7 2
5 2	4 1	3 7	2 6	1 5	7 4	6 3
4 3	3 2	2 1	1 7	7 6	6 5	5 4

Points Tally

Winner – 02

Tie/Draw – 01

Looser = 00

28. 1. NEWTON'S FIRST LAW OF MOTION

In basketball, players on the court must keep in mind about dribbling because the ball will continue to bounce for some time if they lose control. If the ball bounces too far away from a player, his or her team can lose possession.

2. NEWTON'S SECOND LAW OF MOTION

In cricket, while taking a high catch, the player is required to move his hands backwards while taking the catch. This increases the time, thus decreasing the force required to stop the ball. This ensures that the player doesn't get hurt in the process.

3. NEWTON'S THIRD LAW OF MOTION

While swimming, the swimmer pushes the water backwards using his hands and thus attains a forward push due to an equal and opposite reaction from the water.

In sprint races, the starter blocks are based on Newton's third law, where the athlete is propelled forward during the start of the race due to a reaction from the starter blocks.

29. BOW LEGS

Bow legs cause an increase in the curve of the legs and leave a gap between the knees. Bow leg is a condition in which the knees remain wide apart when a person stands with the feet and ankles together. Most of the infants are born bow legged because of their folded position in the uterus. The infant's bowed legs begin to straighten once the child starts to walk and the legs begin to bear the body weight.

Causes: Deficiency of calcium and phosphorus, obesity, deficiency of vitamin D etc.

Corrective Measures

- A. **Leg Strengthening Exercises:** Leg strengthening exercises always develop muscles around the knee and help to improve bowed legs. Strengthening exercise can be performed by lying flat on an exercise bench. Place a 10-lb. weight between feet. Bend at the knees, bringing feet back until the weight hits you in the buttocks. Fully extend legs and repeat.
- B. **Pilates:** Pilates are the best exercises for improving body alignment. Lying down on back and lifting both legs up off the ground and quickly move legs up and down. At the same time tighten abdominal muscles and lifting upper torso slightly off the ground.

30. **PHYSIOLOGICAL FACTORS DETERMINING ENDURANCE ARE:**

- (a) **Maximal Oxygen Uptake:** Maximum oxygen uptake (VO_2 max) refers to the highest rate at which oxygen can be taken up and consumed by the body during intense exercise. The body gets energy from continuous production of ATP.
- (b) **Pulmonary Diffusion:** The most important function of lungs is to transfer oxygen from the atmosphere to the blood and the removal of carbon dioxide from the body. Pulmonary diffusion is the exchange of oxygen and carbon dioxide between the lungs and the blood. Better pulmonary diffusion leads to better endurance.
- (c) **Cardiac Output:** Cardiac output refers to the efficiency of heart to circulate blood to the body per minute. It is calculated by the product of heart rate and stroke volume which is reported in liters per minute. A person having better cardiac output lead to better circulation and this lead for better oxygen transport. The better cardiac output yields to better endurance.
- (d) **Blood Volume:** For endurance activities the working muscles demand considerably more oxygen and nutrients. The oxygen is transported through blood. Regular and intense endurance training increases blood volume. This determines the endurance of the person.
- (e) **Lactate Threshold:** The lactate threshold refers to the intensity of exercise at which there is an immediate increase in blood lactate levels. Every individual has different lactate threshold. Better lactate threshold leads to better endurance. In 1996, McKardle, Katch, & Katch did a study and found that in untrained endurance individuals, the lactate threshold occurs at approximately 50-60% of VO_2 max. However the trained endurance athletes had the lactate threshold to 75% of VO_2 max. Even it was found that in some world class endurance runners it was found 80-90% of VO_2 max.
- (f) **Hydration:** Endurance activities often result to excessive sweating. This results in substantial fluid loss and impaired endurance performance. Dehydration leads to decrease in endurance. Hydrating athletes is very important especially in marathon runners.
- (g) **Slow-twitch Muscle Fibers:** The more slow-twitch fibers yields better energy to the exercising muscles during endurance activity. With training one can change the proportion of the fibers between fast and slow. However studies indicate that these changes are not permanent.

SECTION-D

- 31. (a) Sit & Reach test
- (b) Speed
- (c) Interval training method.
- (d) Plate Tapping test

OR

Flamingo balance test

32. (a) Kyphosis
(b) Hunch Back
(d) Excessive curvature of the spine
(d) Scoliosis

OR

Kyphosis

33. (a) Eunice Kennedy Shriver
(b) Paralympics
(c) Deaflympics
(d) 22 September 1989

SECTION-E

34. VARIOUS TYPES PREVENTION ASTHMA

Tadasana, Katichakrasana, Uttanpadasana, Ardhalasana, Saral Matsyasana, Gomukhasana, Uttan Mandukasana, Vakrasana, Bhujangasana, Makarasana, Shavasana

ASANAS TO PREVENT HYPERTENSION

1. **UTTANPADASANA:** The name comes from the Sanskrit words '*uttana*' which means intense search and '*asana*' meaning posture.

Procedure

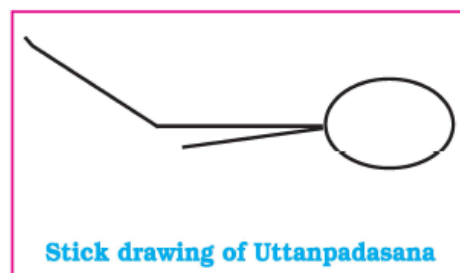
Step 1 : Lie down in supine position with feet together and hands by the sides of the body, palms facing down.

Step 2: Now, slowly stretch the toes outwards.

Step 3: While inhaling, raise both legs at 30° angle. This is the final position of Uttanpadasana. Maintain the position according to your body's capacity and breathe normally. Exhale and return to the initial position.

Benefits

- (i) It balances the navel centre (Nabhi, or Manipurachakra).
- (ii) It is helpful in relieving abdominal pain, flatulence, indigestion and diarrhoea.
- (iii) It strengthens the abdominal and pelvic floor muscles.
- (v) This asana is effective in overcoming depression and anxiety.
- (vi) Uttanpadasana strengthens the abdominal muscles.
- (vi) The pressure on the abdominal wall tones all the organs in the abdomen.
- (vii) It strengthens the lower back muscles helping to relieve lower back pain. It also strengthens the hamstring muscles.
- (viii) Uttanpadasana improves the functioning of the digestive organs. It improves digestion and removes constipation.
- (ix) It is also good for the pancreas and for those who suffer from diabetes.
- (x) It helps in removing gas and acidity problems.
- (xi) Uttanpadasana can help to reduce weight around the abdomen.
- (xii) It improves the functioning of the reproductive organs.



Contraindications

- (i) People with hypertension and back pain shall practice it with one leg alternatively with normal breathing.
- (ii) If you begin to experience discomfort release from the pose.
- (iii) You could also make use of a wall to rest your legs on, if you have difficulty in lifting your legs up.
- (iv) Make sure to avoid bending the knees and lifting the buttocks or lower back to avoid any straining.
- (v) Contraindicated for lower back ache, high blood pressure, people recovering from injury to the spine, and during menstruation.

35. AGE GROUP: 9 TO 18+ YEARS/CLASS: 4TH TO 12TH

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)

FLEXIBILITY (SIT AND REACH TEST)

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 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" × 12" (sides) 12" × 10" (front and back) 12" × 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

36. MEANING OF STRENGTH

Strength is one of the most important components of physical fitness. It is certainly essential for sports performance. Muscular strength is defined as the force that can be exerted by muscles. In simple words, strength is the ability of a muscle or a group of muscles to act or overcome resistance.

TYPES OF STRENGTHS

1. **Static Strength** : Static strength is also called Isometric strength. It is the ability of muscles to act against resistance. Static strength is not usually applied in sports but in weightlifting it is applied in phases.
2. **Dynamic Strength** : Dynamic strength can be called Isotonic strength because it is related to the movements. Movements are clearly visible when someone is using dynamic strength. It is of three types.

METHODS OF IMPROVING STRENGTH

1. **Isometric Exercises:** The isometric exercises could be done on Tuesday and Thursday, whereas isotonic exercises should be done on Monday, Wednesday and Friday. Remaining days are treated as days of rest. In isometric exercises, special instrument is used and is called power rack. The power rack has two adjustable pins which can direct the athlete/lifter to hold isometric contraction with particular weight and at a specific angle. *Some of the examples of isometric exercises are shown below in the pictures.*



Leg Press



Holding legs at 45°



Holding dumb-bell side ways



Pushing a wall

EXAMPLES OF ISOMETRIC EXERCISES

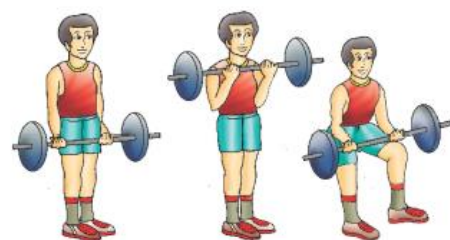
2. **Isotonic Exercises:** De Lorme and Watkins explained isotonic training programme in the systematic manner. They gave the concept of repetition maximum (RM). A repetition maximum is defined as the maximal load a muscle or muscle group can lift at a given number of time before getting fatigued. For example, if a person can lift 80 kg weight for 8 times before getting fatigued, that weight is considered as an eight-RM load. The same weight could be 12 RM load for another person.

De Lorme and Watkins suggested the following program:

Set 1 - 10 repetitions at a 1/2 10 RM load

Set 2 - 10 repetitions at a % 10 RM load

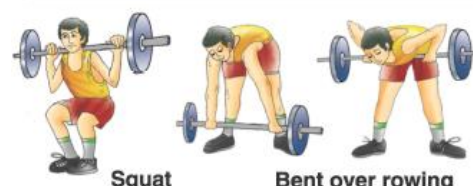
Set 3 - 10 repetitions at a 10 RM load



Arm curling

Wrist curling

EXAMPLES OF ISOTONIC EXERCISES



Squat

Bent over rowing

3. **Isokinetic Exercises:** The isokinetic training should be given between 2-4 days per week. The training should last for 6 weeks or longer. The isokinetic exercises should be done at a speed which is as fast or faster than speed of movement involved in various sports skills. It is suggested that 8-15 contractions should be done in each set. Three sets to be performed for each exercise.

37. MEANING OF EQUILIBRIUM

Equilibrium is a state of balance among forces acting within or upon a body. It is state of no acceleration of body. To maintain equilibrium a person has to keep his center of gravity in an area within and above the base. Equilibrium is achieved if and only if the net sum of forces and their respective movements on a body is zero.

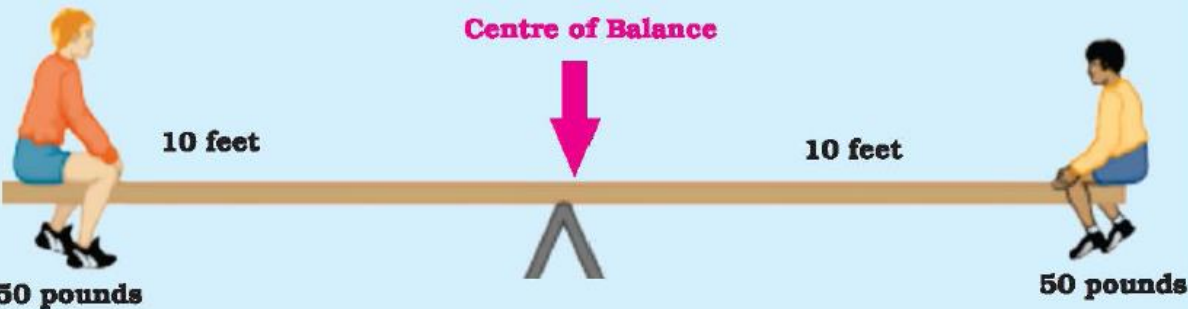
- (a) **Static Equilibrium:** Static equilibrium is that condition when the sum of the forces and the sum of the movements are zero and the body is in a state of rest.
- (b) **Dynamic Equilibrium:** Dynamic equilibrium is that condition when the sum of the forces and the sum of the moments are zero and the body is in state of motion.

Application in Sports

In the 100 m race, when the athlete is about to start and is in the sit position he acquires an unstable position so that he breaks inertia of rest quickly. Same is in the case of swimming, where the swimmer makes his body unstable using the blocks.

APPLICATION OF EQUILIBRIUM IN SPORT

1. Two people balancing on a see-saw.



50 pounds 10 feet Centre of Balance 10 feet 50 pounds

2. In every sport, the athletes maintain stability by lowering the centre of gravity by bending their knees.

3. Boxers can lose balance if they shift their weight on heels because the centre of gravity must fall within the line of base of support for greater stability.

4. Dynamic equilibrium is required by a tennis player to change his position after hitting a shot.