

# National Testing Agency

**Question Paper Name:** 5290 Biomechanics 30th June 2019 Shift 2  
**Subject Name:** Biomechanics  
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**Total Marks:** 100  
**Display Marks:** Yes

## Biomechanics

**Group Number :** 1  
**Group Id :** 489994210  
**Group Maximum Duration :** 0  
**Group Minimum Duration :** 120  
**Revisit allowed for view? :** No  
**Revisit allowed for edit? :** No  
**Break time:** 0  
**Group Marks:** 100

## Biomechanics

**Section Id :** 489994266  
**Section Number :** 1  
**Section type :** Online  
**Mandatory or Optional:** Mandatory  
**Number of Questions:** 100  
**Number of Questions to be attempted:** 100  
**Section Marks:** 100  
**Display Number Panel:** Yes  
**Group All Questions:** No

**Sub-Section Number:** 1  
**Sub-Section Id:** 489994290  
**Question Shuffling Allowed :** Yes

**Question Number : 1 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Movements possible in condyloid joint are

- Flexion and extension
- Circumduction only
- Flexion, extension abduction, adduction
- Flexion, extension, abduction adduction and circumduction.

**Options :**

- 1
- 2

3. 3

4. 4

**Question Number : 2 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Which of the following is an example of uniaxial joint?

- a. Condyloi
- b. Saddle
- c. Hinge
- d. Condylloid and saddle both.

**Options :**

1. 1

2. 2

3. 3

4. 4

**Question Number : 3 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

The cartilage which serves to cushion the impact of large forces on bone ends is called

- a. Fibrous cartilage
- b. Hyaline cartilage
- c. Notch
- d. fossa.

**Options :**

1. 1

2. 2

3. 3

4. 4

**Question Number : 4 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Function of long bones in the body is to

- a. Give strength
- b. Give protection
- c. Act as lever
- d. Provide surface area for muscle attachment.

**Options :**

1. 1

2. 2

3. 3

4. 4

**Question Number : 5 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Force generation but fiber lengthening is also known as

- a. Eccentric contraction
- b. Isotonic contraction
- c. Isometric contraction
- d. Lateral back curve

**Options :**

- 1. 1
- 2. 2
- 3. 3
- 4. 4

**Question Number : 6 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Bending forward of the trunk is an example of movement in the

- a. Frontal plane
- b. Transverse plane
- c. sagittal plane
- d. Longitudinal axis.

**Options :**

- 1. 1
- 2. 2
- 3. 3
- 4. 4

**Question Number : 7 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

A forward upward movement of the foot at the ankle joint is

- a. Plantar flexion
- b. dorsi flexion
- c. inversion
- d. eversion.

**Options :**

- 1. 1
- 2. 2
- 3. 3
- 4. 4

**Question Number : 8 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Bending of head towards right or left side of the shoulder is

- a. Extension
- b. Flexion
- c. Lateral flexion
- d. Lateral extension.

**Options :**

1. 1
2. 2
3. 3
4. 4

**Question Number : 9 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Synovial joints are

- a. Slightly movable
- b. Freely movable
- c. Both (a) and (b)
- d. None of the above.

**Options :**

1. 1
2. 2
3. 3
4. 4

**Question Number : 10 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

The vertical axis passes

- a. Perpendicular to the ground
- b. Horizontal to the ground
- c. Both (a) and (b)
- d. None of above.

**Options :**

1. 1
2. 2
3. 3
4. 4

**Question Number : 11 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

The law of gravity is an example of a law of motion studied in the body of knowledge called

- a. Chemistry
- b. Physics
- c. Mechanics
- d. All the above.

**Options :**

1. 1
2. 2
3. 3
4. 4

**Question Number : 12 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Largest bone in the human body is

- a. Femur
- b. Hummers
- c. Tibia
- d. Fibula.

**Options :**

- 1. 1
- 2. 2
- 3. 3
- 4. 4

**Question Number : 13 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Shortest bone in the human

- a. phalange
- b. metatarsal
- c. in nominate bone
- d. tarsal.

**Options :**

- 1. 1
- 2. 2
- 3. 3
- 4. 4

**Question Number : 14 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Which of the following has maximum percentage in the ComQaVdon bone 1

- a. Calcium sulphate
- b. Calcium phosphate
- c. Chloride
- d. Fluoride.

**Options :**

- 1. 1
- 2. 2
- 3. 3
- 4. 4

**Question Number : 15 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

An athlete covering 100 m distance in 10 seconds, ran at a speed of

- a. 10m/s
- b. 100 m/s
- c. 20 m/s
- d. 1000 m/s.

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 16 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The forces acting on a runner near the end of a race are

- a. Weight
- b. Friction
- c. Air resistance
- d. all the above.

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 17 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The terms reset and motion are studied under

- a. Biochemistry
- b. Anatomy
- c. Biomechanics
- d. None of the above.

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 18 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

. In which type of lever, the weight is in between force and fulcrum?

- a. Type I
- b. Type II
- c. Type III
- d. All the above.

Options :

1. 1
2. 2
3. 3
4. 4

**Question Number : 19 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

The movements around ball and socket joints are

- a. Flexion and extension
- b. Rotation and circumduction
- c. Hyper extension
- d. All the above.

**Options :**

1. 1
2. 2
3. 3
4. 4

**Question Number : 20 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Bone cells are also called

- a. Osteoblasts
- b. osteocytes
- c. osteoclasts
- d. osteoporosis.

**Options :**

1. 1
2. 2
3. 3
4. 4

**Question Number : 21 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Technique of ossification of bones of right hand is used to determine

- a. Height
- b. Age
- c. Weight
- d. Equilibrium ability.

**Options :**

1. 1
2. 2
3. 3
4. 4

**Question Number : 22 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

'Hamstring' muscle

- a. extends knee
- b. flexes knee
- c. extends elbow
- d. flexes elbow.

**Options :**

- 1. 1
- 2. 2
- 3. 3
- 4. 4

**Question Number : 23 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Which of the following is a ball and socket joint?

- a. Hip joint
- b. Shoulder joint
- c. Both (a) and (b)
- d. None of the above.

**Options :**

- 1. 1
- 2. 2
- 3. 3
- 4. 4

**Question Number : 24 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

During abduction the arm moves

- a. Towards the body
- b. Away from the body
- c. In front of the chest
- d. None of the above.

**Options :**

- 1. 1
- 2. 2
- 3. 3
- 4. 4

**Question Number : 25 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

In which type of lever, the force is in between weight and fulcrum?

- a. Type I
- b. Type II
- c. Type III
- d. All the above.

**Options :**

1. 1
2. 2
3. 3
4. 4

**Question Number : 26 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

. 'Latissimus Dorsi' is situated in

- a. lower leg
- b. thigh
- c. Back
- d. upper arm.

**Options :**

1. 1
2. 2
3. 3
4. 4

**Question Number : 27 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

'Lordosis' is also called

- a. Round back
- b. Hollow back
- c. Lateral back
- d. Back curve.

**Options :**

1. 1
2. 2
3. 3
4. 4

**Question Number : 28 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

. Parabola is

- a. The path of an object projected into free air
- b. path of an object formed with air resistance
- c. Path of the object falling vertically down
- d. None of the above.

**Options :**

1. 1
2. 2
3. 3
4. 4

**Question Number : 29 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Which of the following is responsible for limiting the range of movements of joint?

- a. Tendons
- b. Ligament
- c. Both (a) and (b)
- d. Muscle fibers.

**Options :**

- 1. 1
- 2. 2
- 3. 3
- 4. 4

**Question Number : 30 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

. 'Zygomatic' bone is present in

- a. Upper extremities
- b. Lower extremities
- c. Vertebral column
- d. Skull.

**Options :**

- 1. 1
- 2. 2
- 3. 3
- 4. 4

**Question Number : 31 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Flexion at elbow is brought about by

- a. Biceps
- b. Triceps
- c. Both (a) and (b)
- d. None of the above.

**Options :**

- 1. 1
- 2. 2
- 3. 3
- 4. 4

**Question Number : 32 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Study of bones is called

- a. Osteoporosis
- b. Osteoclast
- c. Otology
- d. anthology.

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 33 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The bone cells which are involved in building of bone are

- a. Osteoblasts
- b. Osteoclasts
- c. Osteocytes
- d. None of the above.

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 34 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The skeleton of thorax is made up of

- a. Cartilage
- b. Bone
- c. Both (a) and (b)
- d. None of the above

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 35 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

. According to Hill's model, \_\_\_\_\_ strength decreases as the velocity of muscle contraction increases.

- a. eccentric
- b. isometric
- c. concentric
- d. isokinetic

**Options :**

1. 1
2. 2
3. 3
4. 4

**Question Number : 36 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Which of the following statements about the anisotropic phenomenon is TRUE?

- a. Anisotropy indicates the phenomenon that the tissue exhibits different mechanical properties when loaded in different directions.
- b. Only the bone tissue in human body presents the anisotropic phenomenon.
- c. That the bone can tolerate more tensile stress in the horizontal direction than that in the longitudinal direction is one kind of anisotropic phenomenon.
- d. Both stiffness and strength are greatest in the direction in which daily loads are most commonly imposed.

**Options :**

1. 1
2. 2
3. 3
4. 4

**Question Number : 37 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Strongest ligament of the hip joint is

- a. pub femoral
- b. Ileofoemoral
- c. Ischiofemoral
- d. None of the above

**Options :**

1. 1
2. 2
3. 3
4. 4

**Question Number : 38 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

The maximum content of carbon in 316L stainless steel is

- a. 0.03%
- b. 0.06%
- c. 0.08%
- d. 12 %

**Options :**

1. 1
2. 2
3. 3

4. 4

Question Number : 39 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following statements about a fractured hip implant made from a titanium alloy (Ti6–Al4–V) could NOT be correct?

- a. It failed because it was stressed above its fatigue limit.
- b. It failed because it was loaded beyond its tensile strength.
- c. It failed due to pitting corrosion.
- d. None of these

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 40 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The ionic covalent bonding of oxide ceramics results in which of the following characteristics?

- a. Failure by elastic deformation
- b. Strong in compression and weak in tension
- c. Corrosion resistant in body fluids
- d. All true

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 41 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which statement(s) is FALSE for an amorphous polymer?

- a. It has no crystalline regions.
- b. All chains are random.
- c. It exhibits glass-like properties above its glass transition temperature.
- d. It exhibits electrometric properties above its glass transition temperature.

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 42 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which material has an elastic modulus (stiffness) and strength nearly equivalent to cancellous bone?

- a. Hydroxyapatite (HA)
- b. 45S5 Bioglass®
- c. HAPLEX® composite
- d. Bioglass®/polysulphon composite (BG/ PS)

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 43 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which polymers have been used to make biocomposites with resorbable matrices?

- a. Co-polymers of Poly (lactic acid) PLA/PGA Poly (glycolic acid)
- b. Poly (ethylene) (PE)
- c. Poly (methyl methacrylate)
- d. All above

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 44 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Image Arithmetic is a

- a. Histogram modification
- b. Region Based Operator.
- c. Noise reduction filter.
- d. Point Operator.

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 45 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If the scale of a convolution kernel is doubled the equivalent filter in the fourier domain would have

- a. its scale quartered.
- b. its scale halved.
- c. its scale doubled.
- d. its scale reduced by the square root of two.

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 46 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The positive potential of the cell membrane during excitation is

- a. Action potential
- b. Drift potential
- c. Diffusion potential
- d. Passive potential

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 47 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The ratio of lateral to longitudinal strain is known as:

- a. Poisson's ratio
- b. Young's modulus
- c. Bulk modulus
- d. None of these

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 48 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The material either ruptures or undergoes excessive permanent deformation under:

- a. Failure
- b. Creep
- c. None of these
- d. Fatigue

Options :

1. 1
2. 2
3. 3
4. 4

**Question Number : 49 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

The factor which increases risk of osteoporotic fracture is:

- a. High bone mineral density
- b. High lean mass
- c. High body weight
- d. Poor muscle strength

**Options :**

1. 1
2. 2
3. 3
4. 4

**Question Number : 50 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

A test conducted by applying a load on the material, maintaining the load at a constant level for some time, suddenly removing the load, and observing the material response is called:

- a. Fatigue test
- b. Creep and recovery test
- c. Endurance limit test
- d. None of the above

**Options :**

1. 1
2. 2
3. 3
4. 4

**Question Number : 51 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

A fibrous protein resembling the material properties of rubber is:

- a. Proteoglycans
- b. Collagen
- c. Elastin
- d. None of These

**Options :**

1. 1
2. 2
3. 3
4. 4

**Question Number : 52 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Osteoclasts are active cells that tear down bone by dissolving the organic part of the bone matrix:

- a. Hydroxyapatase
- b. Acid and protein-digesting enzymes
- c. Bases and calcium-digesting enzymes
- d. Epiphyseal reduction

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 53 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

. Which of the following fractures refers to a fracture of a bone in multiple pieces?

- a. Complete
- b. Incomplete
- c. Impacted
- d. Comminuted

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 54 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Compared to younger bones, older bones are more \_\_\_\_\_ due to a decrease in \_\_\_\_\_.

- a. flexible; hydroxyapatite
- b. brittle; hydroxyapatite
- c. brittle; collagen
- d. flexible; collagen

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 55 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Cells that produce new cartilage matrix are called:

- a. chondroblasts.
- b. Chondrocytes
- c. chondroclasts.
- d. Fibroblasts

Options :

- 1. 1
- 2. 2

3. 3

4. 4

**Question Number : 56 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Which of these structures is found in compact bone, but not in spongy bone?

- a. osteoclasts
- b. 1 canaliculi
- c. lamellae
- d. central (Haversian) canals

**Options :**

1. 1

2. 2

3. 3

4. 4

**Question Number : 57 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Carpal joint is the example of:

- a. Pivot joint
- b. Condyloid joint
- c. Hinge joint
- d. Ball and socket joint

**Options :**

1. 1

2. 2

3. 3

4. 4

**Question Number : 58 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

\_\_\_\_\_ is a unique ability of the muscle tissue, which is defined as the development of tension in the muscle.

- a. Extension
- b. Flexibility
- c. Rigidity
- d. Contraction

**Options :**

1. 1

2. 2

3. 3

4. 4

**Question Number : 59 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Chromosome movement during cell division is regulated by:

- a. Microtubules
- b. Microfilaments
- c. Intermediate Filaments
- d. All of these

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 60 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following comes under the category of cell surface receptor?

- a. Enzyme linked receptors
- b. Ion-channel linked receptors
- c. G protein linked receptors
- d. All of these

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 61 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Osteocytes more actively and directly respond to:

- a. Stress
- b. Strain
- c. Fluid Shear
- d. None of These

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 62 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Endoskeleton involves

- a. Covering of skin, hair, nails
- b. Bones and cartilages
- c. Bones only
- d. None of the above.

Options :

- 1. 1
- 2. 2

3. 3

4. 4

**Question Number : 63 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Exoskeleton involves

- a. Covering of skin, hair nails
- b. Bones and cartilages
- c. Long bones only
- d. Short bones only.

**Options :**

1. 1

2. 2

3. 3

4. 4

**Question Number : 64 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Study of joints is called

- a. Kinesiology
- b. Biology
- c. Anthropometry
- d. Anthology.

**Options :**

1. 1

2. 2

3. 3

4. 4

**Question Number : 65 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

'Hunch back' is also known as

- a. Back pain
- b. Scoliosis
- c. lordosis
- d. kyphosis.

**Options :**

1. 1

2. 2

3. 3

4. 4

**Question Number : 66 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Side ward curvature of the spine is called

- a. knock knee
- b. kyphosis
- c. Scoliosis
- d. lordosis.

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 67 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The path of an object project projected into free air space is known as

- a. Speed
- b. abnormal curve
- c. Velocity
- d. parabola.

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 68 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Boxer's muscles are

- a. Trapezius
- b. sterno cliedo mastoid
- c. Abdominal
- d. Deltoid.

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 69 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

'Neck joint' is an example of

- a. Pivot joint
- b. Hinge joint
- c. Saddle joint
- d. Condyloid joint.

Options :

1. 1
2. 2
3. 3
4. 4

**Question Number : 70 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

'Trapeziums' muscles help in

- a. Pushing the neck backward
- b. Punching
- c. Raising the leg forward
- d. None of the above

**Options :**

1. 1
2. 2
3. 3
4. 4

**Question Number : 71 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Strongest ligament of the hip joint is

- a. pub femoral
- b. Ileo femoral
- c. Ischio femoral
- d. None of the above.

**Options :**

1. 1
2. 2
3. 3
4. 4

**Question Number : 72 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Which type of lever is most effective in sport movements?

- a. Third class
- b. Second class
- c. First class
- d. None of the above.

**Options :**

1. 1
2. 2
3. 3
4. 4

**Question Number : 73 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Which muscle is involved in the elevation of arm?

- a. Deltoid
- b. Biceps
- c. Triceps
- d. Quadriceps.

**Options :**

- 1. 1
- 2. 2
- 3. 3
- 4. 4

**Question Number : 74 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Which of the following is an example of bi-axial joint?

- a. Hinge
- b. Pivot
- c. Both (a) and (b)
- d. None of the above.]

**Options :**

- 1. 1
- 2. 2
- 3. 3
- 4. 4

**Question Number : 75 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Number of bones in the axial skeleton is

- a. 60
- b. 80
- c. 40
- d. 20.

**Options :**

- 1. 1
- 2. 2
- 3. 3
- 4. 4

**Question Number : 76 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Number of bones in the appendicle skeleton is

- a. 120
- b. 180
- c. 126
- d. 116.

**Options :**

1. 1
2. 2
3. 3
4. 4

**Question Number : 77 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Under normal forward bending (flexion), the spinal cord experiences

- a. Tension on the posterior side and compression on the other side.
- b. Tension on the anterior side and compression on the other side.
- c. Shear stress on the posterior side and normal stress on the other side.
- d. Bending moment on the anterior side and tension on the other side.

**Options :**

1. 1
2. 2
3. 3
4. 4

**Question Number : 78 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

A ballet dancer rotates his body in the air with his arm by sides at a certain rotational velocity ( $\omega$ ) and the moment of inertia is equal to I. If he wants to reduce his rotational velocity by half ( $\omega/2$ ), what should he do?

- a. to flex his hips up
- b. to lift his arms out
- c. to bend his knees
- d. to put his hand on the head

**Options :**

1. 1
2. 2
3. 3
4. 4

**Question Number : 79 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

The strength of a collagen fiber is defined as

- a. the stress which the fiber can sustain before failure
- b. the strain which the fiber can sustain before failure
- c. the energy which the fiber can store before failure
- d. all of the above

**Options :**

1. 1
2. 2
3. 3
4. 4

Question Number : 80 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

'Neck joint' is an example of

- a. Pivot joint
- b. Hinge joint
- c. Saddle joint
- d. Condyloid joint.

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 81 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Assume a leg has 12m shaft of bone with an average cross sectional area of 3 cm<sup>2</sup>.

What is the amount of shortening when all of the body weight 700 N is supported on this leg? (Young modulus of bone =  $1.8 \times 10^{10}$  N/m<sup>2</sup>)

- a. 0.15 mm
- b. 1.5 mm
- c. 0.51 mm
- d. 5.1 mm

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 82 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Collagen acts like a mechanical

- a. Lever
- b. spring
- c. load
- d. actuator

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 83 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The microstructure of a metal affects its mechanical strength in which of the following ways?

- Yield strength ( $\sigma$  yield) decreases as grain size (D) increases.
- Yield strength ( $\sigma$  yield) increases as grain size (D) decreases.
- A metal with large grains will bend more easily than a metal with small grains.
- All a, b, c are possible ways

Options :

- 1
- 2
- 3
- 4

Question Number : 84 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Applying a bioactive or porous coating to a titanium alloy implant may heat the metal to 800 °C. Which of the following may result?

- The grain size decreases.
- The yield strength decreases.
- The yield strength increases.
- The modulus of elasticity increases.

Options :

- 1
- 2
- 3
- 4

Question Number : 85 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The stress–strain curve for an alumina bioceramic differs from Ti metal alloy (Ti6–Al4–V) in which of the following ways?

- Higher strain to failure
- Lower strain to failure
- Both a & b are true
- Both a & b are false

Options :

- 1
- 2
- 3
- 4

Question Number : 86 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Increased crystallinity in polymers increases which of the following property?

- a. Diffusion of water
- b. Creep
- c. Strain to fracture
- d. Non-linear viscoelasticity

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 87 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

What is not a design objective for composite?

- a. Obtain properties not available for single phase materials
- b. Tailor strength and stiffness to meet specific clinical requirements
- c. Reduce processing costs of single phase materials, such as glasses, metals or ceramics
- d. Achieve anisotropic properties

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 88 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which inert ceramic composites based upon carbon fibres have been tested with clinical failures?

- a. Bone plates for fixation
- b. Pancreas prostheses
- c. Total knee prostheses
- d. Soft tissue augmentation in non-load bearing sites

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 89 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

How do biocomposites rank in clinical importance to metals, ceramics and polymers?

- a. High
- b. Medium
- c. Low
- d. Very low

**Options :**

1. 1
2. 2
3. 3
4. 4

**Question Number : 90 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

An image whose FFT has two peaks displaced horizontally is

- a. A horizontal bar pattern.
- b. Convolution kernel.
- c. A deconvolution kernel.
- d. A vertical bar pattern.

**Options :**

1. 1
2. 2
3. 3
4. 4

**Question Number : 91 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

If  $f$  is convolved with a kernel  $g$ ,  $f$  may be recovered by convolving with

- a. the inverse FT of the reciprocal of the FT of  $g$ .
- b. the inverse FT of the kernel FT.
- c. the FT of the kernel.
- d. the FT of the original image.

**Options :**

1. 1
2. 2
3. 3
4. 4

**Question Number : 92 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

\_\_\_\_\_ are used to provide the contractile mechanism of muscles

- a. Structural proteins
- b. Lipids
- c. Globular proteins
- d. Cytoplasm

**Options :**

1. 1
2. 2
3. 3
4. 4

**Question Number : 93 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Which of the following directly defines the transportation of oxygen?

- a. hemoglobin
- b. oxyhemoglobin
- c. reduced hemoglobin
- d. red cell count

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 94 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Maximum and minimum normal stresses at a material point are:

- a. Shear stress
- b. In plane maximum shear stress
- c. Absolute shear stress
- d. Principal stresses

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 95 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The stress at which the fatigue curve levels are off is known as:

- a. Proportional limit
- b. Creep
- c. Breaking point
- d. Endurance limit

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 96 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Elastic materials show time-independent material behavior. Elastic materials deform \_\_\_\_\_ when they are subjected to externally applied loads:

- a. Gradually
- b. Instantaneously
- c. Continuously
- d. None of these

**Options :**

1. 1
2. 2
3. 3
4. 4

**Question Number : 97 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Which of the following comes under the category of cell surface receptor?

- a. Enzyme linked receptors
- b. Ion-channel linked receptors
- c. G protein linked receptors
- d. All of these

**Options :**

1. 1
2. 2
3. 3
4. 4

**Question Number : 98 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Osteocytes more actively and directly respond to:

- a. Stress
- b. Strain
- c. Fluid Shear
- d. None of These

**Options :**

1. 1
2. 2
3. 3
4. 4

**Question Number : 99 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

The size of actin filament in diameter is nearly:

- a. 7-9 nm
- b. 12-14 nm
- c. 18-20 nm
- d. 24- 30 nm

**Options :**

1. 1
2. 2
3. 3
4. 4

**Question Number : 100 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Mechanical integrity and scaffolding for cells is provided by

- a. Proteoglycans
- b. Hyaluronan
- c. Collagen and Elastin
- d. Integrin

**Options :**

- 1. 1
- 2. 2
- 3. 3
- 4. 4