**DPT 2nd Semester (section A)**

**Course Title:** Biomechanics-I **Instructor: Dr. Ahmed Hayat**

**MID Term Assignment Marks: 30**

Draw a table including all the muscles and their actions of the following joints.

Q1: Shoulder joint.

Q2: Elbow joint.

Q3: Wrist joint.

**Q1: Shoulder Joint**

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| --- | --- | --- | --- | --- | --- | --- |
| INTRINSIC MUSCLES | | | EXTRINSIC MUSCLES | | | |
| ROTATOR CUFF MUSCLES | | | SUPERFICIAL | | DEEP | |
| Supraspinatus | | Abduction | Trapezius  Upper Fibers  Middle Fibers  Lower Fibers | Action  1.Elevation of Scapula,  2.Upward Rotation  1.Retraction of Scapula  1.Depression of Scapula  2.Upward Rotation | Levator Scapulae | Elevation of Scapula |
| Infraspinatus | | External Rotation | Rhomboid Major | Retraction of Scapula |
| Subscapularis | | Internal Rotation | Rhomboid Minor | Retraction of Scapula |
| Teres Minor | | Internal Rotation |  |  |
| OTHER INRINSIC MUSCLES | | | Latissimus Dorsi | 1.Adduction  2.Extension  3.Internal Rotation  4.Depression of Scapula |  |  |
| Teres Major | Medial rotation | |
| Deltoid  1.Anterior  2.Middle  3.Posterior | Flexion  Internal rotation,  Abduction  External Rotation,  Extension | |

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| OTHER MUSCLES OF THE SHOULDER | |
| Serratus Anterior | Protraction |
| Pectoralis Major | Horizontal Adduction  Horizontal Flexion  Medial Rotation |
| Pectoralis Minor | Protraction of Scapula  Downward rotation of scapula |

**Q2: Elbow joint**

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| MUSCLES | ACTION |
| Bicep Brachii  Brachialias  Brachoradialis | Flexion |
| Tricep Brachii  Anconeus | Extension |
| Pronator Teres  Pronator Quadratis | Pronation |
| Bicep Brachii  Supinator | Supination |

**Q3: Wrist Joint**

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| FLEXOR MUSCLES | |
| Flexor Carpi Ulnaris | Flexion  Ulnar deviation of the hand |
| Flexor Carpi Radialis | Flexion  Radial deviation of the hand |
| Flexor Digitorum Superficialis | Flexion of the middle phalanges at the interphalangeal joints  Flexion of proximal phalanges at the metacarpophalangeal joint and hand |
| Flexor Digitorum Profundus | Flexion of distal phalanges at the distal interphanlageal joint |
| Flexor Digiti Minimi Brevis | Flexion of the proximal phalanx of the 5th (little)finger |
| Flexor Pollicis Brevis | Flexion of the thumb |
| Palmaris Longus | Flexes hand at the wrist |
| Flexor Pollicis Longus | Flexes the Thumb |

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| EXTENSOR MUSCLES | |
| Extensor Carpi Radialis Brevis | Extension and  Radial deviation of the wrist |
| Extensor Carpi Radilais Longus | Extension and  Radial deviation of the wrist |
| Extensor Carpi Ulnaris | Extension and  Ulnar deviation of the wrist |
| Extensor Digiti Minimi | Extends 5th digit at metacarpophalangeal and interphalangeal joint |
| Extensor digitorum | Extends the 4th digit and the wrist |
| Extensor Indicis | Extends the 2nd digits and helps in the extension of hand |
| Extensor pollicis Brevis | Extends proximal phlanx of the thumb at carpometacarpal joint |
| Extensor Pollics Longus | Extends distal phalanx of the thumb at carpometacarpal and interphalangeal joint |

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| ABDUCTOR MUSCLES | |
| Abductor Digiti Minimi | Abducts 5th (little)finger |
| Abductor Pollicis Brevis | Abducts Thumb |
| Abductor Pollicis Longus | Abducts Thumb |

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| ADDUCTOR MUSCLES | |
| Adductor Pollicis | Adducts Thumb |

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| OPPOSITION | |
| Opponens digiti minimi | Brings little finger in position to the thumb |
| Opponence policis | Draws 1st metacarpal laterally to oppose thumb toward center of palm |