B.P.

Total number of printed pages–8

34(1) BIOC 1·3

2015

BIOMECHANICS

Full Marks : 80

Time : Three hours

The figures in the margin indicate full marks for the questions.

I. Essay type *(Answer **any two**)* 2×10=20

(1) Explain with diagram the anatomy of thorax. Detail out pump handle and bucket handle movement of the chest.

(2) Explain unilateral stance with stick on the contralateral side with examples. Mention the muscle around the hip joint.

(3) Anatomy of the shoulder joint. Explain dynamic stabilisation of the shoulder joint.

II Short Essay types : *(Answer **any ten**)* 10×5=50

(1) Connective tissues.

Contd.

(6)

(2) Lumbopelvic rhythm

(3) Kinetics & kinematics of gait

(4) Biomechanics of ankle joint

(5) What is posture? Explain. Static and dynamic posture.

(6) Explain classes of levers with examples.

(7) Locking and unlocking mechanism of knee—explain.

(8) Explain the arthrokinematics with diagram.

(9) Classification of joints.

(10) Explain axes and planes

(11) Various types of joint lubrication

(12) Explain open pack & closed pack position of joint

III. Short type : *(Answer **any five**)* 5×2=10

(1) Pes causes & pes planus.

(2) Hysterisis

(3) Angle of torsion

(4) Geau recurvatum

(5) Prehension

(6) Muscle around the shoulder joint

(7) Knock knee.

IV. *Multi Choice Questions :* 20×1=20

(1) Which class is lever of power?

(a) 1st

(b) 2nd

(c) 3rd

(d) 2nd and 3rd.

(2) Normal carrying angle is

(a) 0 – 20°

(b) 0 – 30°

(c) 0 – 10°

(d) 0 – 40°

(3) Pathologic increase of neck shaft angle is known as

(a) Cona vara

(b) Cona valga

(c) Femoral anteversion

(d) Femoral retroversion

(4) Hyaline cartilages are found in

(a) IVD

(b) Ears

(c) Epiglottis

(d) Joints.

(5) Stance phase is ———— % of gait cycle

(a) 40%

(b) 50%

(c) 60%

(d) 70%

(6) Which is not a saddle joint?

(a) Carpometacarpal of thumb

(b) Ankle

(c) Sterno clavicular

(d) Acromioclavicular

(7) ———— joint has got one degrees of freedom

(a) Ankle

(b) Elbow

(c) Interphalangeal

(d) All of the above

(8) Good posture

(a) Saves energy

(b) Looks aesthetically good

(c) Prevents musculoskeletal complications

(d) All of the above

(9) Cadence in normal human locomotion is —

(a) 70 – 90

(b) 90 – 110

(c) 90 – 130

(d) 70 – 130

(10) Angle of Louis corresponds to —

(a) $T_2 - T_3$ spine

(b) $T_4 - T_5$ spine

(c) $T_6 - T_7$ spine

(d) None of the above

(11) Pump handle movement is a feature of

(a) Lower ribs

(b) Upper ribs

(c) Mid ribs

(d) Diaphragm.

(12) "When a fixed force is applied in a tissue and maintained and the deformation produced by the force is measured, the deformation will increase over time". This phenomena is known as

(a) Hysteresis

(b) Strain

(c) Creep

(d) Stress

(13) Antalgic gait is due to

(a) Weakness of hip abductor

(b) Pain

(c) Hip joint stiffness

(d) None

(14) Genu recurnation is

(a) Flexed face

(b) Hyper extended knee

(c) Flexed hip

(d) Hyper extended hip

(15) Gluteus maximus is hip —

(a) Abductors

(b) Flexors

(c) Entensors

(d) Adductors

(16) Sarcomere is the

(a) Contractile unit

(b) Motor unit

(c) Both

(d) None

(17) Opponens pollicis is a

(a) Entrinsic thumb muscle

(b) Intrinsic thumb muscle

(c) None

(d) both

(18) Supinated foot is also known as

(a) Pes Planus

(b) Pes Canus

(c) Cubitus Valgus

(d) Cubitus Varus

(19) Elasticity refers to

(a) Material's resistance to flow

(b) Ability to return to its original state after deformation

(c) Exhibit time dependent behaviour

(d) None

(20) During heel strike, hip flexion is

(a) 10 – 30°

(b) 50 – 60°

(c) 70 – 80°

(d) More than 90°