

Time: Three Hours**Max. Marks: 100 Marks****PHYSIOLOGY – PAPER - II (RS-4)****Q.P. CODE: 1023****(QP contains two pages)**

Your answers should be specific to the questions asked

Draw neat, labeled diagrams wherever necessary

LONG ESSAYS**2 x 10 = 20 Marks**

1. Describe the connections and functions of basal ganglia. Add a note on disorders of basal ganglia
2. Discuss in detail the synthesis and actions of thyroid hormones. Add a note on Grave's disease

SHORT ESSAYS**8 x 5 = 40 Marks**

3. Explain supra spinal control of stretch reflex
4. A 30 year old male who had a recent head injury complained of sudden increase in urine output. He also has immense thirst and nocturia. Blood and urine analysis showed FBS – 95mg/dl; serum osmolality – 305mOsm/kg of water, specific gravity of urine – <1.005; urine volume – 10L/day; urine glucose – nil
 - a) What is the probable diagnosis?
 - b) Name the hormone involved and its site of action
 - c) What is the physiological basis of increased urine output in this condition?
5. Discuss the actions of testosterone and its regulation
6. Draw a neat labelled diagram of pain pathway. Add a note on gate control theory of pain
7. Explain the mechanism of excitation – contraction coupling in skeletal muscle
8. Describe the contents and functions of middle ear
9. Explain postural reflexes integrated at the level of medulla oblongata
10. Describe the uterine changes during menstrual cycle. Add a note on hormonal basis for the same

SHORT ANSWERS**10 x 3 = 30 Marks**

11. Explain classical conditioning
12. What is aldosterone escape?
13. List the functions of placental hormones
14. Explain compound action potential
15. Explain synaptic inhibition
16. Define brain death. List the features of brain death
17. Draw a labelled diagram of taste pathway
18. Explain the different waves of EEG
19. Draw a neat labelled diagram of strength duration curve
20. What is VO_{2max} ?

Multiple Choice Questions**10 x 1 = 10 Marks**

- 21 i) The processing of short-term memory to long-term memory is done in:
A. Prefrontal cortex
B. Hippocampus
C. Neocortex
D. Amygdala
- 21 ii) Capacitation of sperms takes place in:
A. Seminiferous tubules
B. Epididymis
C. Vas deferens
D. Uterus
- 21 iii) Secretion of growth hormone increases with
A. Increase in blood glucose level
B. Increase in cortisol
C. Increase in free fatty acid level
D. Increased sleep
- 21 iv) Action of progesterone:
A. Causes uterine contraction
B. Inhibits LH secretion
C. Decrease in body temperature
D. Causes proliferative changes in uterus
- 21 v) Glucose increases plasma insulin by a process that involves:
A. GLUT 1
B. GLUT 2
C. GLUT 3
D. SGLT 1
- 22 i) In moderate exercise the respiratory rate is increased due to response of:
A. Proprioception receptors in the joints
B. Decreased $p\text{CO}_2$ in arterial blood
C. Increased $p\text{O}_2$ in arterial blood
D. J-receptor stimulation
- 22 ii) In muscle contraction all are true except:
A. A band remains unchanged
B. H zone disappears
C. I band becomes wider
D. Two Z lines come closer
- 22 iii) Transducin is required for:
A. Smell
B. Hearing
C. Taste
D. Vision
- 22 iv) The potential in the endolymph of inner ear
A. End-plate potential
B. Endo lymphatic potential
C. Action potential
D. Cochlear microphonic potential

22 v) The body mass index to be considered as obesity if:

- A. More than 30kg/m^2
- B. More than 25kg/m^2
- C. Between $20\text{-}24\text{kg/m}^2$
- D. Less than 20kg/m^2

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