ANSWER KEY & MARKING SCHEME · CBSE CLASS 11

The Bases of Human Behaviour

Psychology · Chapter 3 · Use this with the Board Paper · Companion to Quick Drill

HOW TO USE

Attempt the Board Paper first (closed-book, full time). Then come here. For 2-mark+ questions, compare your answer to the model. For 3-4 mark questions, also consult the **Topper Templates** below — these show the exact step-by-step structure that scores full marks per CBSE marking-scheme conventions.

MODEL ANSWERS · BOARD PAPER

Section A — Very Short Answer (1 mark each, 4 Qs)

Q1. Name the two structures that make up the central nervous system. [1 mark]

Ans: The brain and the spinal cord.

Q2. Which endocrine gland is called the 'master gland', and why? [1 mark]

Ans: The pituitary gland, because its hormones control the activity of other endocrine glands.

Q3. Name the division of the autonomic nervous system that calms the body after an emergency. [1 mark]

Ans: The parasympathetic division ('rest and digest').

Q4. Which lobe of the cerebral cortex processes vision? [1 mark]

Ans: The occipital lobe.

Section B — Short Answer I (2 marks each, 3 Qs)

Q5. Differentiate between the sympathetic and parasympathetic nervous systems. [2 marks]

Ans: The SYMPATHETIC division arouses the body for emergencies ('fight or flight') — it speeds the heart, dilates the pupils and releases adrenaline. The PARASYMPATHETIC division does the opposite, calming the body and conserving energy ('rest and digest') by slowing the heart and stimulating digestion. In short: sympathetic = arousal; parasympathetic = calm.

Q6. Distinguish between enculturation and acculturation. [2 marks]

Ans: ENCULTURATION is the process of learning the values and practices of one's OWN culture, usually in childhood and largely informally. ACCULTURATION is the cultural and psychological CHANGE that results from sustained CONTACT between two DIFFERENT cultures, such as after migration. In short: enculturation = your own culture; acculturation = contact with another culture.

Q7. Name any two parts of a neuron and state one function of each. [2 marks]

Ans: Any two, for example: (i) DENDRITES — branch-like fibres that RECEIVE signals from other neurons; (ii) AXON — the long fibre that CARRIES the impulse away from the cell body to the next neuron or to muscles. (Also acceptable: cell body — integrates the signal; myelin sheath — speeds conduction.)

Section C — Short Answer II (3 marks each, 3 Qs)

Q8. Describe the structure of a neuron and explain how a nerve impulse is transmitted from one neuron to the next. [3 marks]

Ans: A neuron has three main parts: the DENDRITES, which receive signals; the CELL BODY (soma), which contains the nucleus and integrates the signal; and the AXON, which carries the impulse away (often insulated by a myelin sheath that speeds conduction). Within a neuron the impulse flows DENDRITE -> CELL BODY -> AXON as an electrical signal. To pass to the next neuron it must cross the SYNAPSE, a tiny gap, where the axon terminal releases chemical NEUROTRANSMITTERS that bind to the dendrites of the next neuron, continuing the signal. (1 mark structure, 1 mark within-neuron flow, 1 mark synapse/ neurotransmitters.)

Q9. Describe the major divisions of the human nervous system. [3 marks]

> **Ans:** The nervous system has two main parts. The CENTRAL nervous system (CNS) consists of the brain and the spinal cord, which process information and control behaviour. The PERIPHERAL nervous system (PNS) consists of all the nerves outside the CNS and connects it to the body. The PNS divides into the SOMATIC system, which controls voluntary movement and carries sensory information, and the AUTONOMIC system, which controls involuntary functions (heartbeat, breathing, digestion). The autonomic system further divides into the SYMPATHETIC (arousal) and PARASYMPATHETIC (calming) divisions. (1 mark CNS, 1 mark PNS, 1 mark somatic/autonomic split.)

Q10. Describe the endocrine system. Name any three glands, the hormone each secretes, and one effect. [3 marks]

> **Ans:** The endocrine system is a network of glands that secrete chemical messengers called HORMONES into the bloodstream to influence behaviour and bodily functions. Three examples: (i) the PITUITARY (master gland) secretes growth hormone and controls other glands; (ii) the THYROID secretes thyroxin, which regulates metabolic rate (energy use); (iii) the ADRENAL glands secrete adrenaline, which supports the 'fight or flight' emergency response. (Also acceptable: gonads -> sex hormones -> reproduction/puberty; pancreas -> insulin -> blood sugar.) 1 mark per correct gland + hormone + effect.

Section D — Case Study / Long Answer (5 and 6 marks, 2 Qs)

Q11. Describe the structure of the human brain. In your answer, name the three main regions with one function each, and explain the functions of the four lobes of the cerebral cortex. [5 marks]

> **Ans:** The human brain has three regions. The HINDBRAIN (medulla, pons, cerebellum) controls vital functions — the medulla regulates breathing and heartbeat, while the cerebellum controls balance and the coordination of movement. The MIDBRAIN relays sensory and motor signals and controls some reflexes. The FOREBRAIN, the largest and most recently evolved region, contains the cerebrum (the seat of higher thought), the thalamus (a sensory relay) and the hypothalamus (which controls hunger, thirst, temperature and the endocrine system). The cerebrum's outer layer, the CEREBRAL CORTEX, has four lobes: the FRONTAL lobe (thinking, planning, decision-making and voluntary movement); the PARIETAL lobe (touch, temperature and body sensation); the TEMPORAL lobe (hearing, language and memory); and the OCCIPITAL lobe (vision). (Marks: 2 for the three regions with functions; 2 for the four lobes; 1 for thalamus/hypothalamus or overall organisation.)

Q12. Read the passage and answer the parts that follow. Before her stage performance, Meera's heart began to pound, her palms became sweaty and her pupils dilated. Her grandmother, who recently moved from a village to live with the family in the city, has slowly started using the city's language and food habits while keeping her own festivals. Meera's parents often debate whether her confidence comes from her inborn temperament or from the encouraging way she was raised. (a) Which division of the autonomic nervous system is responsible for Meera's pounding heart and dilated pupils, and what is its general role? (b) Which endocrine gland releases the hormone that supports this bodily reaction, and name that hormone. (c) The change in the grandmother's behaviour after moving to the city is an example of which cultural process? Justify. (d) The parents' debate about inborn temperament versus upbringing reflects which classic debate in psychology, and what is the modern view on it? (e) Name the part of the brain that controls balance and coordination. [6 marks]

> **Ans:** (a) The SYMPATHETIC division of the autonomic nervous system. Its general role is to arouse the body for emergencies ('fight or flight') — speeding the heart, dilating the pupils and preparing the body for action. (b) The ADRENAL glands, which release ADRENALINE (epinephrine), supporting the rapid emergency response. (c) ACCULTURATION, because the grandmother's behaviour is changing as a result of sustained CONTACT with a new (city) culture while she still keeps elements of her own — an example of the integration strategy. (d) The NATURE-NURTURE debate (heredity vs environment). The modern view is that behaviour results from an INTERACTION of the two: genes set a range of possibilities and the environment shapes how the trait develops. (e) The CEREBELLUM (part of the hindbrain). (Marks: 1 + 1 + 1.5 + 1.5 + 1.)

★ TOPPER ANSWER TEMPLATES — 3 TEMPLATES · MEMORISE THE FORMAT

★ TOPPER TEMPLATE — 3-4 mark question: 'Describe the structure of a neuron and explain how a nerve impulse is transmitted.'

Almost every annual and SQP

Step 1 [1 mark]	**Name the parts of the neuron**	Open by naming the three main parts: the DENDRITES (branch-like fibres that RECEIVE signals), the CELL BODY or soma (contains the nucleus and integrates the signal), and the AXON (the long fibre that CARRIES the impulse away, often covered by a myelin sheath that speeds conduction). Naming all three cleanly earns the anchor mark; a quick labelled sketch helps.
Step 2 [2 marks]	**Trace the impulse within and between neurons**	Explain the flow: a stimulus generates an electrical impulse that travels DENDRITE -> CELL BODY -> AXON within the neuron. At the axon tip the impulse reaches the SYNAPSE — the tiny gap between two neurons — where it triggers the release of chemical messengers called NEUROTRANSMITTERS, which carry the signal across to the dendrites of the NEXT neuron. State the direction explicitly; reversing it loses the 'flow' mark.
Step 3 [1 mark]	**Link structure to function**	Close by stating WHY this matters: this electro-chemical relay is how the entire nervous system communicates — sensing the environment, processing it in the brain, and producing behaviour. Connecting the neuron to behaviour, rather than stopping at anatomy, is what lifts the answer to full marks.

COMMON LOSS OF MARKS:

- Reversing the impulse direction (axon -> dendrite within one neuron).
- Forgetting the synapse and neurotransmitters — the impulse does not jump electrically across neurons.
- Labelling a diagram but never explaining the FUNCTION of each part.

★ TOPPER TEMPLATE — 5-mark question: 'Describe the structure of the human brain' / 'Explain the functions of the lobes of the cerebral cortex.'

Annual + Pre-Board

Step 1 [1 mark]	**Divide the brain into three regions**	Begin with the broad map: the brain has three regions — the HINDBRAIN (medulla, pons, cerebellum: controls vital functions like breathing, heartbeat, and balance/ coordination), the MIDBRAIN (relays sensory and motor signals, controls some reflexes), and the FOREBRAIN (the largest region, seat of higher functions). Naming all three with one function each secures the structural mark.
Step 2 [3 marks]	**Detail the forebrain and the four lobes**	Zoom into the forebrain: the CEREBRUM, covered by the wrinkled CEREBRAL CORTEX, is the centre of thinking, memory and voluntary action, and is divided into four lobes — FRONTAL (thinking, planning, decision-making, voluntary movement), PARIETAL (touch, temperature, body sensation), TEMPORAL (hearing, language, memory), and OCCIPITAL (vision). Mention the thalamus (sensory relay) and hypothalamus (controls hunger, thirst, temperature and the endocrine system). One function per lobe is the mark-dense core of this answer.
Step 3 [1 mark]	**Add the hindbrain detail / link to behaviour**	Round off with the cerebellum's role in balance and coordinated movement and the medulla's control of life-support functions, then state that this layered structure — old survival centres beneath newer thinking centres — reflects the brain's evolution. The integrative closing sentence earns the final mark.

COMMON LOSS OF MARKS:

- Placing the cerebellum in the forebrain or giving it 'thinking' as its job.
- Mixing up the lobes — e.g. crediting vision to the temporal lobe instead of the occipital.
- Listing regions with no functions — examiners want structure PLUS function.

★ TOPPER TEMPLATE — 4-6 mark case-study / question: identify and explain enculturation, socialisation and acculturation, or apply the nature-nurture / autonomic concepts to a situation.

SQP case-study + Annual

Step 1 [1 mark]	**Identify the correct concept from the cue**	Read the stem for the keyword. 'Learning one's own customs as a child' -> ENCULTURATION; 'learning to be a member of society / rules and roles' -> SOCIALISATION; 'change after contact with a new/foreign culture (migration)' -> ACCULTURATION; 'heart pounding / sweating before a threat' -> SYMPATHETIC nervous system; 'genes vs upbringing' -> nature-nurture. Name the concept first and clearly.
Step 2 [2 marks]	**Define the concept and justify with the stem**	Give the precise one-line definition, then quote the cue: 'Because the passage describes a family that moved abroad and began adopting the host country's food and dress, this is ACCULTURATION — psychological and cultural change resulting from contact between two cultures.' Tying the definition back to the evidence is where the application marks live.
Step 3 [1 mark]	**Add a contrast or real-world point**	Finish by distinguishing it from the nearest neighbour: 'This differs from enculturation, which is learning one's OWN culture in childhood.' For a biological stem, add the calming role of the parasympathetic system afterwards. Showing the contrast secures the final mark and demonstrates higher-order understanding.

COMMON LOSS OF MARKS:

- Naming a concept but not justifying it with the cue from the passage.
- Confusing enculturation (own culture) with acculturation (contact with another culture).
- Treating nature-nurture as either/or instead of an interaction.

MARKING SCHEME — GENERAL NOTES

- Neuron answers must give the impulse direction (dendrite -> cell body -> axon) AND the synapse/neurotransmitter step for full marks; a missing synapse caps the answer.
- For brain questions, structure WITHOUT function (or function without naming the region) caps at half; keep cerebrum (thinking) distinct from cerebellum (balance).
- The 'master gland' must be answered as the pituitary; thyroid or adrenal earns zero on that part.
- Sympathetic must be tied to arousal/'fight or flight' and parasympathetic to calm/'rest and digest' — swapping them earns no marks.
- For culture terms, enculturation (own culture), socialisation (member of society) and acculturation (contact with another culture) must be kept distinct; nature-nurture must be presented as an interaction, not either/or.