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Question: 1

When accelerations precede a variable deceleration pattern, this is caused by

A. hypoxic reflex response
B. occlusion of the umbilical vein
C. oligohydramnios

Answer: B

Explanation:
Comprehensive and Detailed Explanation From Exact Extract (No URLs or Links)
NCC-recommended physiologic texts (AWHONN, Menihan, Simpson, Creasy & Resnik) explain that variable decelerations are caused by umbilical cord compression. This process occurs in a three-step sequence, well known in fetal monitoring physiology:
Umbilical vein occlusion occurs first → decreases fetal venous return → brief fetal acceleration (a compensatory sympathetic response).
Umbilical artery occlusion follows → increases fetal systemic vascular resistance → variable deceleration as vagal stimulation lowers the fetal heart rate.
Release of compression → post-deceleration acceleration may occur.
Thus, an acceleration immediately before a variable deceleration represents the initial compression of the umbilical vein, not a hypoxic response. This is a normal physiologic response to transient cord compression, often described in AWHONN and Menihan ' s physiologic explanation of “shoulders” around variable decelerations.
Oligohydramnios can contribute to cord compression but does not explain accelerations preceding the deceleration. A “hypoxic reflex” would not produce a pre-deceleration acceleration.
Therefore, the correct physiologic cause is:
Umbilical vein occlusion.
References (No URLs)
NCC C-EFM Candidate Guide 2025 – Physiology
AWHONN Fetal Heart Monitoring Principles
Menihan: Electronic Fetal Monitoring
Simpson & Creehan: Perinatal Nursing
Creasy & Resnik: Maternal–Fetal Medicine

Question: 2

A key differentiating factor when determining if a deceleration is early or late is the

A. depth of the deceleration
B. onset to nadir
C. timing in relation to contractions

Answer: C

Explanation:
Comprehensive and Detailed Explanation From Exact Extract (NCC-Referenced Sources)
AWHONN and Menihan clearly state that classification of decelerations is determined by their timing relative to uterine contractions:
Early decelerations: “mirror the contraction; onset, nadir, and recovery occur simultaneously with the contraction.”
Late decelerations: “begin after the contraction begins and return to baseline after the contraction ends.”
Depth is not a differentiating feature, as both early and late decelerations may vary in depth. The onset-to-nadir interval is used to differentiate variable vs. early/late , not early vs. late.
Thus, timing relative to contractions is the correct NCC-supported answer.

Question: 3

Uterine contraction intensity is manually measured by degree of uterine:

A. Indentation
B. Muscle strength
C. Pain

Answer: A

Explanation:
Comprehensive and Detailed Explanation From NCC-Aligned Equipment Concepts:
When using external tocodynamometry , uterine contraction intensity cannot be measured in mmHg. It is assessed manually , using palpation . NCC and AWHONN teach:
Contraction intensity is estimated by palpating the fundus during a contraction.
The degree of firmness versus indentation determines intensity:
Mild → uterus easily indented
Moderate → firm, difficult to indent
Strong → rigid, cannot be indented
Why the incorrect answers are wrong:
B. Muscle strength — Not measurable by external or manual exam.
C. Pain — Not a reliable indicator; pain perception varies widely and does not correlate with uterine intensity.
Thus, the correct manual measurement is done through uterine indentation , making A correct.
[References:NCC C-EFM Candidate Guide; AWHONN Principles & Practices; Menihan EFM; Miller’s Pocket Guide; Simpson & Creehan.]

Question: 4

The most highly oxygenated blood in the fetal circulation is found in the

A. descending aorta
B. ductus venosus
C. pulmonary arteries

Answer: B

Explanation:
Comprehensive and Detailed Explanation From Exact Extract Sources:
In fetal physiology, the highest oxygen saturation exists in the umbilical vein, which then flows through the ductus venosus before entering the right atrium.
According to Creasy & Resnik Maternal-Fetal Medicine, and AWHONN physiologic foundations:
The umbilical vein carries oxygen-rich blood from the placenta (approx. 80% saturation).
Most of this blood bypasses the liver via the ductus venosus, which therefore contains the most highly oxygenated blood within the fetal circulatory system.
By contrast:
The descending aorta contains mixed blood with significantly lower oxygen content due to mixing after passage through the ductus arteriosus.
The pulmonary arteries in the fetus carry predominantly deoxygenated blood, since fetal lungs are fluid-filled and have high pulmonary vascular resistance.
Thus, the structure containing the highest fetal oxygen concentration is the ductus venosus.
[References:Creasy & Resnik – Maternal Fetal Medicine;AWHONN Fetal Monitoring;Simpson & Miller – Fetal Monitoring Physiology;NCC C-EFM Content Outline – Physiology Domain.]

Question: 5

A fetus displays a baseline heart rate of 125 beats per minute with moderate variability. During a contraction, the baseline rate drops abruptly to 80 beats per minute with gradual return to baseline over 90 seconds. This is classified as:

A. Early deceleration
B. Prolonged deceleration
C. Variable deceleration

Answer: C

Explanation:
Comprehensive and Detailed Explanation From NCC-Aligned Sources:
NICHD definitions:
A variable deceleration is identified by:
Abrupt onset (drop from baseline to nadir in < 30 seconds)
Depth ≥15 bpm
Duration ≥15 seconds and < 2 minutes
Variable timing relative to contractions
Variable shape (sharp drop, jagged descents, rapid recovery)
The scenario describes:
Abrupt drop from 125 → 80 bpm (rapid onset)

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Lasting 90 seconds (still < 2 minutes)
Gradual return but still within variable range
Occurring during a contraction
Depth > 15 bpm
This meets ALL criteria for a variable deceleration.
Why the other options are wrong:
A. Early deceleration
Requires gradual onset (> 30 seconds).
Mirrors contraction shape.
Caused by head compression.
This decel is abrupt, so NOT early.
B. Prolonged deceleration
Requires ≥2 minutes and < 10 minutes.
This decel lasts 90 seconds, which is below the threshold.
Correct classification: Variable deceleration.
[References:NICHD FHR Definitions; NCC Pattern Recognition Domain; AWHONN FHMPP; Menihan; Simpson & Creehan.]

Question: 6

A reliable indicator of fetal oxygenation is fetal

A. heart rate accelerations
B. movement
C. regular sleep–wake cycles

Answer: A

Explanation:
Comprehensive and Detailed Explanation From Exact Extract NCC-Recommended Sources
AWHONN and NICHD definitions state that fetal accelerations are a strong indicator of adequate fetal oxygenation and neurologic integrity. Accelerations reflect intact sympathetic and parasympathetic balance and adequate oxygen reserve.
Simpson & Creehan emphasize accelerations as “the most reliable sign of fetal well-being,” because they require intact autonomic function, sufficient pH, and adequate oxygenation. Menihan also identifies accelerations as the most reassuring feature on a fetal heart tracing.
Fetal movement is helpful but not directly reflective of oxygenation , as movements can decline for non-hypoxic reasons (sleep cycles, maternal sedation). Regular sleep–wake cycles are normal developmental neurologic patterns and not oxygenation markers.
Creasy & Resnik reinforce that “presence of accelerations reliably indicates absence of metabolic acidemia.”
[References:, AWHONN – Fetal Heart Monitoring Principles & PracticesSimpson & Creehan – Perinatal NursingMenihan – Electronic Fetal MonitoringCreasy & Resnik – Maternal-Fetal MedicineMiller’s Pocket Guide,]

Question: 7

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During amnioinfusion, the infusion should be stopped periodically to assess changes in:

A. Baseline uterine pressure
B. Contraction pattern
C. Patient pain level

Answer: A

Explanation:
Comprehensive and Detailed Explanation From Exact Extract–Based NCC C-EFM References:
During amnioinfusion, NCC emphasizes monitoring for uterine overdistention , which can lead to uterine hypertonus, uterine rupture, or placental separation. The primary way to evaluate overdistention is by measuring baseline uterine pressure via IUPC.
Rising resting tone (> 20–25 mmHg) indicates accumulating fluid and risk.
Stopping the infusion intermittently allows recalibration and assessment of uterine baseline pressure.
Contraction pattern (option B) is important but not the primary safety parameter .
Pain (option C) is nonspecific and not a reliable indicator of uterine overdistention.
Thus, the infusion is stopped to assess baseline uterine pressure .
[References:NCC C-EFM Candidate Guide; AWHONN Fetal Heart Monitoring Principles & Practices; Miller's Fetal Monitoring Pocket Guide; Menihan Electronic Fetal Monitoring.,]

Question: 8

Fetal cardiac output is essentially dependent on the fetal:

A. Activity
B. Baroreceptors
C. Heart rate

Answer: C

Explanation:
Comprehensive and Detailed Explanation From NCC-Aligned Sources:
Because the fetal myocardium is immature , it has:
Limited ability to increase stroke volume
Limited ability to increase contractility
Therefore, fetal cardiac output (CO) is almost entirely dependent on heart rate .
NCC and AWHONN physiology describe:
CO = stroke volume × heart rate
In the fetus, stroke volume is relatively fixed
Therefore, changes in HR directly affect cardiac output
Tachycardia → increases CO
Bradycardia → decreases CO → decreased perfusion and oxygen delivery
Why the other options are incorrect:
A. Activity does not fundamentally determine CO.

B. Baroreceptors regulate HR reflexively but are not the primary determinant of cardiac output.
Correct

Question: 9

The success of interventions to treat fetal hypoxia first depends on:

A. Improving maternal oxygenation
B. Minimizing uterine activity
C. Optimizing uteroplacental blood flow

Answer: C

Explanation:
Comprehensive and Detailed Explanation From NCC-Aligned Sources:
NCC/AWHONN emphasize that the primary goal of intrauterine resuscitation is to:
Optimize uteroplacental blood flow, which restores fetal oxygen delivery.
Key measures include:
Maternal repositioning (lateral)
Reducing tachysystole
IV fluid bolus
Correcting maternal hypotension
Stopping oxytocin
Treating underlying causes
Improving maternal oxygenation is supportive, but improving uteroplacental perfusion is the critical first determinant of resuscitation success.
Why the other answers are not first priority:
A. Oxygen — optional and no longer universally recommended unless maternal hypoxemia exists.
B. Minimizing uterine activity — essential, but still secondary to restoring perfusion.

Question: 10

Maternal–fetal exchange during labor is diminished by:

A. An increase in maternal cardiac output
B. Open-glottis pushing in second stage
C. Placental calcifications

Answer: C

Explanation:
Comprehensive and Detailed Explanation From NCC-Aligned Sources:
Placental calcifications:
Reduce surface area for maternal–fetal gas exchange
Impair placental perfusion
Are associated with post-dates and chronic insufficiency

Decrease the placenta’s ability to oxygenate the fetus
Why the incorrect answers are wrong:
A. Increased maternal cardiac output → improves uteroplacental perfusion.
B. Open-glottis pushing → improves oxygenation compared with closed-glottis Valsalva pushing.

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