PetroBowl® Question Writing Guidelines

Here are some useful guidelines to help you ensure your questions can be used at a PetroBowl Championship. Please note that your submission(s) will be reviewed by a panel and will only be used if deemed suitable. We cannot guarantee that your question will be used at a Petrobowl Quiz once submitted. We can only accept submissions from qualified oil and gas professionals. As the quiz is for students, no students or university staff are eligible to submit questions. For any queries please contact Petrobowl@spe.org

All questions must have valid sources. Questions based on general knowledge, experience, or common sense, are subject to interpretation, regional standards and could be outdated. All questions must be able to be validated if queried during a contest. As this is an international contest, global publications that all students can access are preferred.

Toss up questions – All toss up questions should be short, with one word or very brief answer questions. All Questions should be knowledge based and are not intended to be guessed or worked out. All toss up questions are worth 10 points therefore this does not need to be announced at the beginning of each question.

- Questions should be quick to read out
- Questions should be fact based, testing knowledge and memory relating to the industry
- Answers should be 1 word only or a very short phrase to respond.
- Questions cannot be based on acronyms without giving the appropriate context of that acronym
- Answers should not be guessed (i.e. no multiple choice, True or False, Yes or No questions)
- Questions should not be open to interpretation, a definitive answer is required

Bonus Questions – Bonus questions can come in a variety of formats and allow for different scores. Bonus questions can also allow more time for reasoning and application, but answers should still be limited to a sentence, rather than an essay or description. Bonus questions can be verbal, visual or calculation based. Questions that ask for multiple answers must require three correct answers for maximum points. All other questions should be for 10 points for 1 answer. Though multiple parts are allowed, questions still should not be multiple choice or allow for guessed answers.

Because of variety of questions the format should be described to allow the teams to prepare. Each Bonus Question should start by clarifying the format of the question and then the points available;

- ➢ "For 10 points…" - For verbal one answer questions
- ➢ "For 3 points each or 10 points in total" – For verbal multiple part questions
- ➢ "This is a visual question" (followed by points) – For visual based questions
- ➢ "This is a calculation Question." (followed by points) – For calculation based questions.

- Questions can be Visual, Calculation, based or Verbal.
- Answers can be longer than a toss-up question, but a definitive answer is still required.
- Questions should describe their format and points available
- Multiple part questions require 3 answers for the maximum points available (more answers may be possible, but only 3 are needed)

Recommended reference material:
All question sources and references need to be verified to be used in the contest, as the audience is global sources must also be globally accessible for students (ie not regional journals etc.). Some suggested reference material to write your questions is shown below;

SPE Books, Schlumberger Glossary, PetroWiki, OnePetro, Engineering and Technology History Wiki (http://ethw.org)

Bad Examples

❌ Example – Q: Which of the following is not a past PetroBowl Champion?
    1. University of Tulsa
    2. University of Houston
    3. University of Texas at Austin

(No multiple choice questions, student should know the answer, not be able to guess it.)

❌ **No questions based on acronyms without giving the appropriate context of that acronym**

Example – Q: What does PDC stand for?

✓ *Corrected version - "Q: With respect to downhole drilling bits, what does PDC stand for?"*

❌ **No true/false, Yes/No or A,B,C questions allowed (students should not be able to guess)**
Example - Q: For a conventional drill pipe, is the tool joint diameter larger or smaller than the pipe body?
    - Q: University of Tulsa was the 2014 PetroBowl Champion, True or False?

✓ *Corrected version* - For a conventional drill pipe, how would the tool joint diameter be compared to the pipe body?
Corrected version - Who was the 2014 PetroBowl Champion?

❌ **Toss up questions should NOT have a descriptive answer. Answer should be preferably a one word answer or a very short phrase. Questions requiring descriptive answers should be Bonus Questions ONLY.**

Example - Q: What is the significance of the critical temperature of impurities on MMP of CO_2 mixtures?
    A: Impurities with a critical temperature less than CO_2 (304.2 K; or 86.6 F) will raise the MMP and impurities with critical temperatures higher than CO_2 will reduce the thermodynamic MMP of the mixture.

✓ *Corrected version* – Q: What does the normal pressure correspond to?
    A: Hydrostatic pressure of the local fresh or saline water

All calculation, visual questions and verbal questions requiring multiple answers should be bonus questions

✓ Example – Q: For 3 points each or 10 points in total, what are the three basic types of decline curves?
    A: Exponential, Hyperbolic, Harmonic

Example:
❌ • For 10 points, name the five most commonly used classes of API cement in the oilfield.
✓ • For 3 points each or 10 points in total, name the three most commonly used classes of API cement in the oilfield.

Questions should not be more than two sentences – less than 50 words preferably
Example:
✓ • In a wildcat well, the tool shown or a variant are often run to obtain fluid samples. If high quality fluid samples are successfully obtained, what reservoir property, often plotted with depth, is almost always also obtained? *(This example is the __maximum__ ideal length).*

Time or year based statistical questions should not be more than 2 years old
Example:
❌ • What was the average oil production rate of the United States in million barrels of crude oil per day in 2010?

Non-technical questions should only comprise of:

- Company logos
- Mergers & acquisitions
- Major current events
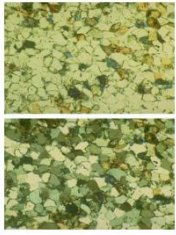- Major historical events
- SPE History

SPE based questions will be vetted by the SPE staff. In case of a SPE related question, kindly provide the source and mark that question as SPE related.

Example Questions:

Toss up questions:

#	Question	Answer	Calculation / Visual?	Discipline	Task	Difficulty	Author / Source
1	Cut mud, lost circulation, swabbing, improper hole fill-up during trips, and insufficient mud weight are all potential indicators of what?	A kick	No	DRILLING	Well Control	Low	Lake, Larry. W.: "Drilling Engineering", Richardson, TX, SPE, 2007, p.186
2	A porosity-resistivity crossplot is a convenient method for deriving formation water resistivity. Name one of the two commonly used crossplots.	1) Hingle Plot 2) Pickett Plot.	No	FORMATION EVALUATION	Log Interpretation / Formation Properties	Medium	Dewan, John T.: "Essentials of Modern Open-Hole Log Interpretation," PennWell Corp 1983. P 199-200.
3	Name the two-phase flow correlation that was developed for vertical, upward flow and recommended only for near-vertical wellbores.	Hagedorn and Brown	No	RESERVOIR	Phase Behaviour & Fluid Flow	High	Economides, M., Hill, A., Ehlig-Economides, C.: "Petroleum Production Systems," 1993, pp 155
4	What is the ratio of the mole fraction of a component in vapor phase to the mole fraction of the same component in liquid phase called?	K value	No	PRODUCTION	Production Surveillance	Medium	Surface Production Operations p. 688
5	What is a mud supported limestone with more than 10% grains is classified?	Wackestone	No	FORMATION EVALUATION	Log Interpretation / Lithology	Medium	Boggs Jr., Sam: "Principles of Sedimentology and Stratigraphy", Upper Saddle River, NJ, Pearson Prentice Hall, 2006, p.173

Bonus Questions:

#	Question	Answer	Calculation / Visual?	Discipline	Task	Difficulty	Author / Source
1	For 3 points each or 10 points in total, name three basic types of decline curves.	Exponential, Hyperbolic, Harmonic	No	RESERVOIR	Risk Analysis & Decision Making	Low	Practical Enhanced Reservoir Engineering p. 388
2	This is a visual question. The following image indicates the precipitation of cement between mineral or rock grains and forming solid clastic sedimentary rock. For 10 points, what do we call this process?	Positive, Dynamic	No	PRODUCTION	Surface Equipment	Low	Petroleum Production Systems p. 551
3	The following is a CALCULATION question: An aqueous solution has a hydrogen ion concentration of 1 x 10^-8 mol/L. For 10 points each what is the pH of this substance.	8 and basic. Also acceptable: 8 and alkaline	Calculation	RESERVOIR	PVT Analysis	Low	AL, ADAM. Applied Drilling Engineering. Richardson, TX: Society of Petroleum Engineers, 1986. p.45
4	MWD is often used to measure inclination and azimuth while extending a wellbore. In order to do this, non-magnetic drill collars must be used. `For 3 points each or 10 points in total, name three different materials non-magnetic drill collars may be made of.	K Monel 500 Alloy (also acceptable: copper/nickel alloy), Chrome/nickel steels, Austenitic steels, copper beryllium bronzes	No	DRILLING	Equipment	High	Bourgoyne, Adam T. Applied Drilling Engineering. Richardson, TX: Society of Petroleum Engineers, 1986. Print. P. 389
5	The following is a CALCULATION question: A capillary tube is filled with a liquid-gas column. Due to adhesion, the liquid will experience an upward force. For 10 points, if the gas-liquid surface tension is 25 dynes/cm, the cosine of the contact angle is 0.637, and the radius of the capillary tube is 10^-4 cm, what is the upward force on the liquid?	F_{up} = (2*pi*r)*(surface tension)*(cosine contact angle) $=2*pi*10^{-4} * 25 * 0.637$ $=0.01$ dynes	Calculation	RESERVOIR	SCAL	Medium	Bourgoyne, Adam T. Applied Drilling Engineering. Richardson, TX: Society of Petroleum Engineers, 1986. Print.

For more information or for further examples please contact PetroBowl@spe.org