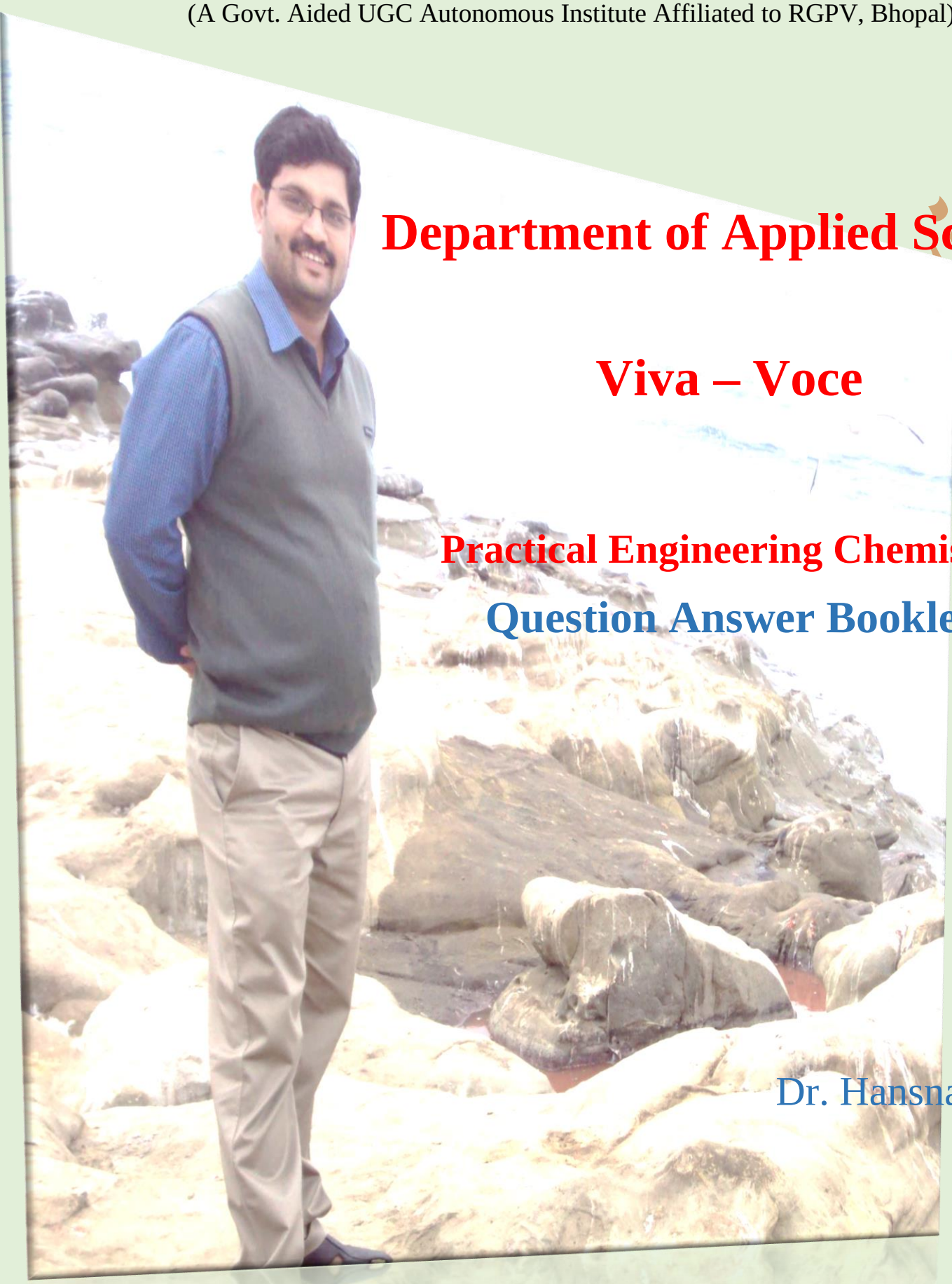
Madhav Institute of Technology & Science, Gwalior

(A Govt. Aided UGC Autonomous Institute Affiliated to RGPV, Bhopal)



Department of Applied Science

Viva – Voce

Practical Engineering Chemistry

Question Answer Booklet

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Chemistry Lab

Viva-Voce, Question-Answer Booklet

Experiment. 5

Determination of flash point and fire point of given lubricating oil by Pensky- Marten' and closed cup and Cleveland open cup apparatus Cleveland open cup apparatus.

Que. 1. What is flash point?

Answer. The flash point is a general indication of the flammability or combustibility of a liquid lubricant. It is the minimum temperature at which the oil gives off sufficient vapour to ignite momentarily when a flame of standard dimensions is brought near the surface of the oil.

Que. 2. What is fire point?

Answer. The lowest temperature at which vapours of the oils burn continuously for at least five seconds when a flame of standard dimensions is brought near the surface of the oil.

Que. 3. What is the importance of flash and fire point?

Answer. The flash-point and fire points of a lubricant help to ensure the safety against fire hazards. It also helps to a certain degree to predict the purity or contamination level of lubricant.

Que. 4. Write down the name of instrument which is used in determining the flash and fire point of a liquid lubricant.

Answer. 1. Cleveland Open cup apparatus.

2. Penskey Marten's closed cup apparatus.

3. Abeles closed cup apparatus.

Que. 5. Which factor can affect the flash point of a liquid lubricant?

Answer. If lubricant is contaminated with water**,** the flash point would be increased because moisture interferes in the combustion of the vapours.

Que. 6. How can we lower the flash point of a liquid lubricant?

Answer. By contaminating the liquid lubricant with a compound of low molecular weight which has a low boiling point.

Que. 7. How can we remove water from oil?

Answer. By using anhydrous calcium chloride we can dehydrate the oil.

Experiment No. 6

To determine percentage of iron (Fe II) in given iron alloy solution in which 3gms of iron alloy dissolved in one liter of solution by Redox titration.

Que. 1. What is alloy?

Answer. Alloy is a mixture of either two or more metals or metals with other elements. For example. Steel – it is an alloy of iron and carbon some time chromium is also added into it to give the strength.

Que. 2. What is Mohr's salt?

Answer. Ferrous Ammonium Sulphate or Ammonium Iron (II) Sulphate is known as Mohr's salt. It is an example of the double salt.

Que. 3. What do you understand by the term "Double salt"?

Answer. When a single crystalline structure is formed as a result of the combination of two different salts it is known as double salt. For example Mohr's salt.

$$(NH_4)_2SO_4 + Fe\ SO_4 + 6H_2O \rightarrow (NH_4)_2Fe(SO_4)_2.6H_2O$$

Que. 4. What is the universal indicator?

Answer. The mixture of indicators which have a very wide range of pH nearly 3.0 to 11.0.

Que. 5. Explain the followings with a suitable examples: internal indicator, external indicator and self-indicator

Answer.

1. **Internal Indicator –** If there is nothing in the reaction medium to indicate the end point of any titration or reaction then the addition of some chemicals into the reaction medium externally become necessary, such chemicals are known as internal indicators. For example Methyl orange, Phenolphthalein and so on.
2. **External Indicator** - To check the reaction endpoint if some drops of solution are added to some chemical or indicator externally (not in reaction medium) that indicator is known as an external indicator. For example potassium ferricyanide in the titration of potassium chromate with Mohr's salt.
3. **Self-Indicator –** If there is something already present in the reaction medium to indicate the end point of the reaction or one of the reactant act as an indicator itself, then that reactant is known as self-indicator. For example Titrant $KMnO_4$ acts as a self-indicator in the titration of oxalic acid with $KMnO_4$.

Que. 6. What is redox titration?

Answer. The titration which involves simultaneous oxidation and reduction reactions is called redox titration.

Que. 7. What is called permangnometry titration?

Answer. If in any redox titration $KMnO_4$ is used as an oxidizing agent that titration is known as permangnometry titration.

Que. 8. Why the Mohr's salt solution is prepared in dil. H_2SO_4?

Answer. To avoid the oxidation and hydrolysis of the Mohr's salt we prepared the solution in dil. H_2SO_4.

Que. 9. In which category of the indicator will you like to keep the $KMnO_4$ in this particular titration?

Answer. Here the $KMnO_4$ act as a self-indicator.

Experiment No. 7

To determine percentage of Chromium in given chromium alloy solution in which 3gms of chromium alloy dissolved in one liter of solution by Redox titration

Que. 1. Give an example of Chromium alloy?
Answer. Stainless steel is an example of chromium alloy.

.Note – all other questions are same as above for this practical also.