Q NO-1 ; Write about MR spectroscopy and its usage in clinical practice –

ANS ; Spectroscopy as series of tests which is added to MRI scan of patient brain or in spine region to calculate the metabalism in suspected tumer –

MR spectroscopy specialy use to analyzes the molecule proton or hydrogen ions –

MRS allows a procedure or technique that can probe a large veriety of metabolic usage across different tissues - It can be used for detection’ staging ‘ hepatic ‘ prostate ‘ tumer ‘ aggressiveness evaluation and tumer response assessment and also use for neural and psychiatric study and breast prostate –

Gastrointestinal and genitourinary investigation have been reviewd -

Q NO- 2 ; Write detail note on contrast ‘ media and how its effects on image detail –

ANS ; In MR the contrast is used for the internal body structure visibility - The most common compound for contrast as gadolinium bassed - Such agents shorten the hydrogen neuclei relaxation time in the body tissue such is oral or interavenious contrast agents administration - The megnitude of the spin polarization detected by the reciver is used to form MR image but decay with the characteristic times contrast known as the T1 relaxation time water proton in different tissue have different T1 values ‘ which is one of main source of contrast in MR images – A contrast agents usually shorten - But some time the contrast increase the the values of T1 of near by water proton there by altering contrast in image –

In general scan times are not negligible and there is certain tendency towards artifacts - However the most limitation in MRI is the signal to noise ratio SNR - Which is depend upon on hardware – The better quality of image depend upon to make the better quality of scaning parameter choices –

Q NO - 3 ;How can we determine or select a certain slice thickness and from where does the signal come from –

ANS ; We consulate the slice thickness in two way one sollution as to send in not only one specific frequency which is not done in practice - But in RF pulse it is a range of frequency - the wider the range of frequencies the thicker the slice in which the proton will be excited - if we use an RF pulse with frequencies from 64 to 65 mHz the proton in a smallar slice will show ressonance –

There is another way to select the different between the slice thickness in our exampale use a gradient field to produce precessing or resonant frequencies starting at 60 mHz at the feet up to 68 mHz at the top of the head – If we have a stronger gradient field such is more different beetween field strenght over a specific distance - The precission frequency will also vary to a larger degree – 1st we say from 58 to 72 mHz –If we now use the RF pulse of the band width as in containing frequencies between 64 to 65 mHz - the slice thickness in our exampale c with the stronger gradient field is smaller than example A