

Sem IV (Rev) Electronics 8 (May 2012)

sub: - E & E M I & M

ws May-2012-44

Con. 4839-12.

GN-9602

(3 Hours)

[Total Marks : 100

- N.B. :** (1) Question No. 1 is **compulsory** and solve any **four** questions out of remaining **six**.
(2) Assume **suitable** data if **necessary** and mention that assumption while solving that question.
(3) **Figures to the right** indicate **full** marks.

1. Any four :-

20

- (a) A PMMC instrument has FSD of 100 μ A coil resistance is 1 K Ω . Calculate the required shunt resistance value to convert the instrument in to an ammeter with (i) FSD = 100 mA (ii) FSD = 1A.
(b) What is the difference between electrical instruments and electronic instruments ?
(c) Explain basic principle of frequency meter.
(d) When oscilloscope time base is disconnected and various types of signals are connected to vertical and horizontal inputs then draw displays.

	Vertical I/P	Horizontal I/P
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i	Sine Wave	OV
ii	Sine Wave	Sine wave..... same 'f' 0° phase
iii	Sine Wave	antiphase sine wave"
iv	Sine Wave	Sine wave with 90° phase. same frequency.

- (e) What is Meggar ? Explain its working.

2. (a) What is ohmmeter ? Explain working principle of series and shunt ohmmeter. Also compare them. Comment on calibration of ohmmeter. 10
(b) What is resolution and sensitivity of digital voltmeter ? Explain working principle with block diagram of successive approximation type DVM. 10
3. (a) Explain with the block diagram basic elements of a laboratory type function generator. Which is the basic function generated ? How ? How frequency is controlled ? How sine function is generated ? 10
(b) Explain with the block diagram basic elements of digital phase meter. How the meter tells about which waveform is leading or lagging ? Mention limitations of this type of meter. 10
4. (a) What is the need of time base generator in standard CRO ? How the time base signal is generated ? What is delay line ? Why it is needed ? Why some times the triangular wave observed in CRO moves left or right continuously ? How to stabilise it ? What actually happens when we get steady waveform on CRO ? 10
(b) What is z-modulation in CRO ? For what purpose it is used ? Can frequency and phase difference be measured using z-modulation ? 10

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5. (a) What is Q meter ? Explain its working principle with the help of circuit diagram. 10
(b) What are the two types of connections for measuring resistance using voltmeter, ammeter method ? Compare the two methods. 10
If voltmeter is connected across supply type connection the measured current is 0.5 A and voltmeter indication is 500 V. Ammeter has a resistance $R_a = 10 \Omega$. Calculate the value of 'R'.
6. (a) With reference to the characteristics and applications, differentiate between D.C. shunt and series motors. 10
(b) Explain the principle of operation of PMMC and moving Iron type of instruments. 10
Compare the two basic types.
7. (a) What are the various torques required in PMMC ? How they are generated ? 10
What is the requirement of each of the torque ?
(b) **Draw only** the Kelvin's double bridge. 6
(c) Explain in short basic principle of working of stepper motor ? 4
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