END SEMESTER EXAMINATIONS (DECEMBER 2021/JANUARY 2022) - QUESTION PAPER - PART A

COURSE CODE : ICE-2153
COURSE NAME : Electronic Measurements
SEMESTER : III
DATE OF EXAM : 24/01/2022
DURATION : 48 minutes

Instructions for Students:
(1) ANSWER ALL THE QUESTIONS.
(2) EACH QUESTION CARRIES 1 MARK.
(3) YOU ARE INSTRUCTED TO INFORM THE INVIGILATOR AFTER SUBMISSION OF THIS FORM IN THE CHAT SECTION.

* Required

* This form will record your name, please fill your name.

1

STUDENT NAME: *

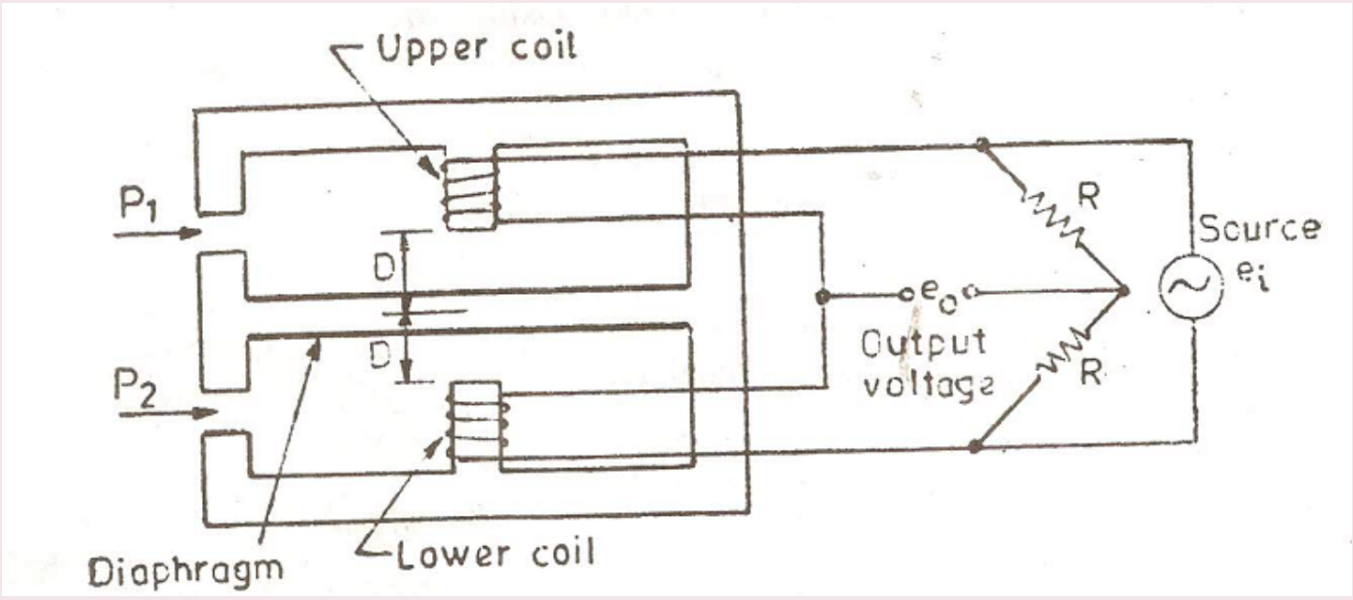
2

REGISTRATION NUMBER: *

The value must be a number

3

Maxwells inductance bridge is used for measurement of differential pressure as shown in figure. Inductance corresponding to upper coil and lower coil is L1 and L2 respectively. Inductance (L)is given by L=N^(2)/R.(N=number of turns, R=reluctance) When p1=p2 ,L1 is equal to L2. When p1>p2 ,
(1 Point)



- L1>L2
- L1=L2
- None of these
- L1<L2

4

The_____ recorder used for plotting B-H curves for magnetic materials.
(1 Point)

- X-Y
- Circular chart
- Potentiometric type
- LVDT type

5

The bandwidth of a magnetic tape recorder is_____.
(1 Point)

- higher than strip chart recorder
- higher than electronic recorder
- lower than strip chart recorder
- higher than ultraviolet recorder

6

A 5-bits ADC has a step size of 8mV.The full-scale output voltage and resolution percentage are_____ respectively.
(1 Point)

- 566mV, 5.66%
- 125mV, 3.23%
- 125mV, 6.43%
- 248mV, 3.22%

7

Errors in bridge due to non-inductive resistors can be reduced by_____.
(1 Point)

- Magnetic shielding.
- Wagner earth device.
- Desigining resistors in two parts
- Earthed metallic shields

8

A dual slope ADC has C=0.45nF and R=1k Ω, the integrator integrates in negative direction till 12ns and then starts integrating in positive direction for next 9ns.The reference voltage is given as 4 volts. What will be the peak voltage reached by the triangular wave?
(1 Point)

- 0.066V
- 0.055V
- 0.08V
- 0.07V

9

A spectrum analyser is a combination of_____.
(1 Point)

- oscillator and wave analyser
- VTVM and CRO
- signal generator and CRO
- narrow band super-hetrodyne receiver and CRO

10

The control grid is kept at _____ potential with respect to cathode and the knob controlling the grid is called the _____ control.
(1 Point)

- Negative , intensity
- Negative, focus
- positive , focus
- Positive , intensity

11

The input voltage of 11.2V is converted to _____ digital value using 4-bit successive approximation ADC with reference voltage of 16V.
(1 Point)

- 1101
- 1011
- 1110
- 1010

12

To avoid aliasing in given signal, the sampling rate must be greater than or equal to

(1 Point)

$$x(t) = \frac{1}{4\pi}\cos(4000\pi t)\cos(1000\pi t)$$

- 6000Hz
- 3000Hz
- 5000Hz
- 2000Hz

13

Frequency distortion occurs due to _____of the amplifier and phase distortion occurs due to_____in the system.
(1 Point)

- Frequency,reactance
- Frequency ,impedance
- Frequency, resistance
- Amplification factor,energy storage elements

14

A Lissajous pattern on the oscilloscope is stationary having 8 vertical maximum values and 6 horizontal maximum values. Calculate the frequency of vertical input if the frequency of horizontal input is 1800 Hz.
(1 Point)

- 3200Hz
- 2400Hz
- 600Hz
- 1200Hz

15

High voltage scheirng bridge is used for measurement of____.
(1 Point)

- Small inductances
- Small capacitances
- Large capacitances
- Large inductances

16

The theory of electromagnetic focusing states that when an electron enters a constant magnetic field _____ to its path, it is deflected and moves in a _____path.
(1 Point)

- perpendicular, semicircular
- perpendicular, circular
- parallel , semicircular
- parallel, circular

17

Series connection Q-meter is used for measurement of_____.
(1 Point)

- high value resistors, small coils, large capacitors.
- low value resistors, large coils, large capacitors.
- low value resistors, small coils, large capacitors.
- low value resistors, large coils, small capacitors.

18

The _____ resistor is connected in series with 5mm white LED when forward voltage, forward current, supply voltage are 3.6V, 30mA and 12V respectively.
(1 Point)

- 270Ω, 1 Watts
- 270Ω, 0.5 Watts
- 330Ω, 1 Watts
- 330Ω ,0.5 Watts

19

In _____graticule the distance between the marks on the graticule and the actual phosphor coating could be nearly_____cm.
(1 Point)

- external, 0.5
- internal ,1
- internal, 0.5
- external, 1

20

The spectrum analyser is said to operate in the_____domain because it allows one to measure the_____ content of an electric signal, that is, the power of each of its spectral components.
(1 Point)

- Time,distortion
- Time,harmonic
- Frequency,harmonic
- Frequency,distortion

21

The unknown frequency using wein bridge is dependent on R1,R2,C1,and C2.When R1 =400 , R2=500 ,C1=2uF and C2=3uf,the measured frequency is_____. When C2 is altered to 5uF, the difference in measured frequency is____.
(1 Point)

- 235.25Hz,32.75Hz
- 145.28Hz,32.75Hz
- 235.25Hz,54.65Hz
- 145.28Hz,63.75Hz

22

The primary reason for creeping is due to _____ compensation and can be avoided by drilling _____holes on the aluminum disc
(1 Point)

- Over,3
- Over,4
- under, 2
- Over,2

23

_____ sampling technique is used when signals are prone to noise during transmission.
(1 Point)

- Ideal
- Natural
- Quantization
- Flat-top

24

The order of components used for measurement of frequency is given as_____.
(1 Point)

- unknown frequency-schmit trigger-amplifier-start/stop gate-digital readout.
- unknown frequency-start/stop gate-amplifier-schmitt trigger-digital readout.
- unknown frequency-schmitt trigger-start/stop gate-amplifier-digital readout.
- unknown frequency-amplifier-schmitt trigger-start/stop gate-digital readout.

25

A wave analyser is basically a super heterodyne receiver covering the _____range of frequency with an IF of 100 kHz.
(1 Point)

- 20Hz to 50KHz
- 100KHz to 100GHz
- 5 MHz to 5 GHz
- 100KHz to 1 MHz

26

Cross talk in passive matrix LCD can be avoided by adding_____ liquid crystal molecules to twisted nematic structure.
(1 Point)

- Calamitic
- Discotic nematic
- Smectic
- Cholesteric nematic

27

A spectrum analyser is used across the frequency spectrum of a given signal to study _____.
(1 Point)

- current distribution
- voltage distribution
- energy distribution
- power distribution

28

5-bit flash type ADC requires _____ comparators.
(1 Point)

- 16
- 31
- 15
- 32

29

_____is the method of recording and usually requires one track for each channel and_____is used to record dc signals.
(1 Point)

- Direct,frequency modulation
- Pulse duration modulation,frequency modulation
- Frequency modulation,pulse duration modulation
- Frequency modulation,direct

30

Arm AB: Light dependant resistor (LDR): 500Ω
Arm BC:500Ω
Arm CD:500Ω
Arm DA:500Ω
Arm AC: 5 V DC supply (positive terminal at A), Arm BD: detector
Due to increase in light failing on LDR, the resistance drops to 450Ω.The change in bridge output voltage is_____.
(1 Point)

- 32.7mV
- 26.3mV
- 74.5mV
- 45.4mV

31

The braking torque in induction type energy meter is directly proportional to_____ of the disc and this can be adjusted by shifting the _____. (1 Point)

- Speed,permanent magnet
- Speed, electromagnet
- Size, velocity
- Size,permanent magnet

32

Two sinusoidal signals of the same frequency are displayed on a dual-trace oscilloscope. One complete cycle of each signal covers 6 cm of the horizontal scale and the starting point of the horizontal scale and the starting point of the two signals are separated by 0.5 cm. The phase difference between the two signals in degrees is (1 Point)

- 30
- 90
- 45
- 60