

Question Bank
Electronics Paper XIII
Electronics Instrumentation (BET 601)

Q. 1: Define following terms/Answer in one sentence (2 Marks Each)

1. Define the terms: Accuracy and precision.
2. Which method is used to measure high resistance?
3. GPIB stands for?
4. What could be the maximum reading on 3 -1/2 digit voltmeter?
5. What is the input impedance of C.R.O?
6. Define the terms: Sensitivity and Linearity.
7. Which method is used to measure low resistance?
8. PMMC stands for?
9. Define static error.
10. Define the terms: Sensitivity and Linearity
11. Distinguish between zero drift and span drift.
12. What is meant by accuracy and precision of an instrument?
13. Define a dynamic response of an instrument.
14. What is mean by PTC?
15. List out the dynamic characteristics of any measurement system.
16. What are the types of error measurement system?
17. What are the static characteristics important?
18. How resistors are are checked using digital multimeters?
19. What are the advantages of digital instruments over analog instruments?
20. Define resolution of DVM.
21. What are the various principles of analog type electrical instruments?
22. Why the PMMC instrument is not used for a.c measurements?

23. What is the principle of ramp type digital voltmeter?
24. Explain the purpose of Schmitt trigger in digital frequency meter.
25. State the advantages of using the bridge circuits for the measurement.
26. What is the sensitivity of Wheat stone bridge?
27. What are the sources of errors in Wheat stone bridge?
28. Which measurement can be carried out by Maxwell bridge?
29. Define transducer.
30. What are the classifications of transducers?
31. What is primary transducer?
32. What is secondary transducer?
33. What is active transducer? Mention some example.
34. What is passive transducer? Mention some example.
35. What is analog and digital transducers?
36. Define strain gauges.
37. Define gauge factor.
38. Mention types of strain gauge.
39. What is inductive transducer?
40. What is the basic principle of capacitive transducer?
41. What is piezo electric effect?
42. Which bridge is used to measure frequency?

Q.2: Attempt any two**(10 Marks Each)**

1. Explain with neat diagram working of Galvanometer instrument.
2. Explain with neat diagram working of Megger method to measure high resistance.
3. Draw neat block diagram of Data Acquisition System and explain working of each block.
4. Explain with neat diagram working of PMMC instrument.
5. Draw neat Block diagram of DSO and explain its working.
6. Describe the construction and working of PMMC instrument. Derive the equation for deflection if the instruments are spring controlled.
7. Describe the circuit of Kelvin double bridge used for measurement of low resistance.
8. Explain how the inductance is measured in terms of known capacitance using Maxwell's bridge.
9. Explain the construction and working of a LVDT.
10. Explain the construction and working of a RTD.
11. Explain the construction and working of a Thermistor.
12. Explain the construction and working of a Thermocouple.
13. Describe the principle of working and circuit diagram of a digital oscilloscope.
14. With neat figure explain the working principle of a digital CRO. What are its advantages of analog CRO?
15. With neat figure explain the construction and working principle of a digital storage oscilloscope. Compare its advantages over an analog CRO.

Q.3: Attempt any four

(5 Marks Each)

1. Write short note on photo diodes.
2. Explain with block diagram ECG system.
3. Write the static characteristics of Instruments.
4. Explain working of Dual Slope Integrator type DVM .
5. Explain with neat diagram Hay's bridge.
6. Explain with neat diagram Wien's bridge method for frequency measurement.
7. Write short note on RTD.
8. Write the dynamic characteristics of Instruments.
9. Explain working of Dual Trace Oscilloscope.
10. Explain with neat diagram Maxwell's bridge method.
11. Explain with neat diagram Wheatstone bridge method.
12. Write the static characteristics of Instruments.
13. Describe any Five static characteristics of measuring instruments.
14. Give the application and limitations of Wheat stone bridge.
15. List the advantages of using standard capacitor in Maxwell bridge.
16. 7. Give the advantage and limitations of Maxwell bridge.
17. Mention some advantages and disadvantages of LVDT.
18. 21. Mention the applications of LVDT.)
19. What is thermistor? State the advantage and disadvantages.
20. Mention some advantages and disadvantages of capacitive transducer.
21. Explain with neat diagram the working of Schering bridge.
22. With neat diagram explain in detail about Hay bridge.
23. Explain with neat diagram working of Anderson bridge.
24. How the transducers are classified on the basis of principle of operation?
25. Describe the different principles of working of capacitive transducers.
26. Explain the difference between thermistor and thermocouples.

27. Explain the principle of operation of piezo electric transducer.
28. Explain the working of moving Coil instruments.
29. Draw and explain the circuit diagram of digital frequency meter.
30. Explain the working of a digital multimeter with a schematic block diagram.
31. Derive the bridge balance condition for the Maxwell bridge and Schering bridge.
32. Describe the circuit of Kelvin double bridge used for measurement of low resistance.
33. Explain how the inductance is measured in terms of known capacitance using Maxwell's bridge.
34. Explain the working of Schering bridge.
35. Which bridge is used to measure frequency?
36. With neat diagram explain in detail about Hay bridge.
37. Explain about the Anderson bridge.

Electronics Paper XIV
BET602: Antennas and Wave Propagation
Question Bank

Q1). Answer in one sentence

(1X2 Marks= 2 Marks)

1. What is the ratio of the ideal VSWR?
2. What is Percentage Bandwidth?
3. What is defined as the power per unit solid angle?
4. What is antenna Aperture Efficiency?
5. What is the real part of antenna input Impedance?
6. What is another name of half wave dipole antenna?
7. Folded dipole antenna belongs to which type of antenna?
8. Which is the lowest layer of atmosphere?
9. In which layer of atmosphere free electrons and ions are present?
10. Which antenna consists of two straight collinear conductors of equal length, separated by small gap?
11. What is the term self-impedance of antenna?
12. The impedance at the centre of the antenna is known as?
13. What is known as the distance between two consecutive points in antenna theory?
14. Which lobe in the antenna radiation pattern indicates the direction of maximum radiation?
15. Which of the layer is used mostly for the long-distance communication?
16. Which is a property of troposphere?
17. which antenna contains the uniform or omnidirectional radiation pattern in one dimension.?
18. What is the frequency range of half wave dipole antenna?
19. What is a device that convert photons into electrons and electrons into photons called?
20. What is the basic requirement of transmitting antenna?
21. What is/are the major applications of an infinitesimal dipole that contribute/s to its analysis?
22. How are the infinitesimal dipoles represented in terms of antenna length?
23. What is the name of the lobe in the radiation pattern that is opposite to the main lobe?
24. What is called the direction in which the radio wave does not propagate in any direction in the antenna radiation pattern?
25. Which is the nearest region from the earth surface in the atmosphere?
26. Which is the nearest Ionospheric layer to the earth surface?
27. where the RF source connects the Dipole antenna?
28. What is the basic equation of radiation applied to any antenna irrespective of the type of antenna?
29. Hertzian dipole carries which type of current throughout its length while radiating?
30. In which radio wave propagation temperature inversion layer is present?

Q2) Long answer questions

(1X10 Marks = 10 Marks)

1. Write a note on Radiation Mechanism of antenna wave propagation.
2. Write a detail note on antenna input impedance.
3. classify microstrip antenna and with suitable diagram Write construction working and radiation pattern of microstrip.
4. With types explain Concept of smart antenna.
5. Write information about what is Radio wave propagation? its categories and Line of sight (LOS) propagation.

6. Write a detail note on antenna input impedance.
7. classify dipole antenna and write a note on infinitesimal dipole antenna.
8. Write construction working and radiation pattern of Half-wave Dipole antenna.
9. Write information about what is Radio wave propagation? its categories and Ground wave propagation.
10. Explain the concept of antenna Bandwidth and Directivity with mathematical expression.
11. Explain the following terms of antenna parameters.
 - a) Beamwidth b) Effective height c) Beam area d) Radiation Intensity d) Aperture Efficiency e) Wavelength
12. Write a detail note on Loop antenna.
13. Write information about what is Radio wave propagation? its categories and Sky wave propagation.
14. Explain the following terms i) Skip Distance ii) Maximum Usable Frequency (MUF) iii) Optimum Working Frequency (OWF) V) Skin Depth
15. Explain the following terms of antenna parameters a) Antenna Efficiency b) Antenna Aperture c) Percentage Bandwidth d) Fading of antenna e) Frequency

Q3) Short Answer Questions

(1X5 Marks =5 Marks)

1. Describe Necessity of Impedance Matching.
2. Write down what you know about Dipole antennas.
3. With neat sketch explain Bowtie antenna.
4. With neat diagram explain construction and working of Full-wave Dipole antenna.
5. Write Properties of Radio Waves.
6. Write Advantages and Disadvantages of Ground Wave Propagation.
7. Write information about Monopole antenna.
8. Write down what you know about Hertzian dipole antennas.
9. Write note on VSWR & Reflected Power of antenna.
10. With neat sketch explain Fractals Antenna.
11. What are the key features of radio waves?
12. Write down what you know about Duct Propagation concept
13. Show the classification of antennas in a different category.
14. Write key features of VSWR
15. With suitable diagram explain Biconical antennas.
16. Write Importance of Ionosphere.
17. Explain the terms a) Skip Distance b) Optimum Working Frequency (OWF)
18. What is multi path fading?
19. What is relationship between Directivity and HPBW?
20. Why do we use high frequency waves in sky wave propagation?
21. Explain in detail about ground wave propagation.
22. Explain the concept of lobe formation of radiation pattern.
23. Write down what you know about antenna input impedance.
24. Write down how the antenna works as a transmitter.
25. Write down how the antenna works as a receiver.
26. Write note on full-wave Dipole antenna.

27. Explain Elementary idea of propagation of waves used in Terrestrial mobile communications.
28. Describe Design of microstrip patch antenna.
29. Describe advantages of smart antenna over a conventional antenna.
30. Derive the electric and magnetic field components of Hertzian dipole.

Question Bank:
B.Sc.III General Science Semester VI
Electronics **Paper XV (BET603) Advanced Microcontroller: PIC**
Subject Code:18012

2 Marks Question:

1. What is mean by ALU?
2. How many clock pulses are confined by each machine cycle of Peripheral-Interface Controllers?
3. What is the size of SP in PIC18?
4. What is the default address location of Stack Pointer After power on reset PIC MCU
5. What is long form of CISC.
6. One machine cycle of PIC microcontroller consist How many clock pulses?
7. What is mean by ALU in computer?
8. What is long form of RISC.
9. What is the default address location of Stack Pointer After power on reset PIC MCU
10. What is the size of Program Counter in PIC18?
11. Using PIC micro controller how is analog signal is converted into digital signal?
12. What is flash memory?
13. What are interrupts available in PIC micro controller
14. Which port will support for external interrupt in PIC.
15. Draw the bit pattern for configuring the USART.
16. What is the main function I2C interface?
17. What are the main difference flash memory & EEPROM?
18. Mention the special functions of PORTA.
19. Why flash memory is mostly preferred than other memory? 10. What is key debouncing?
20. What is RISC architecture?
21. How many clock pulses are required by each machine cycle of PIC MCU?
22. Define ALU in microcontroller?
23. Define RISC architecture in computer.
24. What is the default address location of PSW, After power on reset PIC MCU
25. What is the size of Program Counter in PIC18F452 microcontroller ?
26. What is RISC architecture?
27. What are the timer modes in PIC?
28. List the function of I/O ports in PIC.
29. What is C Compiler?
30. What is CCP module

10 mark Question:

1. Enlist the features of PIC microcontroller; explain one of them with neat block diagram.
2. Draw and explain simplified view of PIC18 MCU architecture.
3. With neat block diagram, explain organization of PIC18 file register.
4. Draw and explain architecture of PIC18 MCU.
5. Write an assembly language program for BCD to ASCII conversion using PIC instruction set.
6. Draw and explain the architecture of on chip ADC of PIC micro controller in detail write a suitable assembly language program for configuring the ADC.

7. Draw and explain the PIC18 MCU instruction pipeline & mention its significance.
8. A switch is connected to pin RC0. Write a program to check the status of SW and do the following function . If SW =0, send letter 'G' to PORTB.; If SW=1, send letter 'S' to PORTB
9. With a neat diagram discuss in detail about the architecture of PIC micro controller.
10. Discuss in detail about the function of various port pin of PIC micro controller
11. Explain the different addressing modes of PIC micro controller.
12. Discuss in detail about the memory organization of PIC micro controller.
13. Discuss about the various function of PORT in PIC micro controller.
14. Write a program to read the data, convert to ASCII and displays it in a micro controller.
15. Draw and explain the instruction pipeline & mention its significance.
16. What are the features of PIC microcontroller; explain one of them with neat block
17. Write a program in PIC micro controller to multiplying 'N' byte numbers.
18. Explain the RAM and ROM allocation PIC 18F4520.
19. Write an assembly language program to add two numbers stored in location 07H & 08H.
20. Explain in detail about the compare and capture mode of the PIC micro controller with a neat diagram.
21. Write a detailed note on the FLASH & EEPROM memories .
22. Explain the UART in PIC micro controller.
23. Write a detailed note on I2C bus.
24. Write a detailed note on ADC0804 chip.
25. Explain the I2C communication protocol in PIC microcontroller
26. A switch is connected to pin RC3. Write a program to check the status of SW and do the following function . If SW =1, send letter 'O' to PORTB.; If SW=0, send letter 'N' to PORTB
27. Explain the UART in PIC micro controller to send and receive data.
28. Discuss the timer 0 operations and write the steps to initialize them stating appropriate control words in the associated SFRs.
29. Write a program to convert packed BCD to ASCII conversion using PIC
30. Discuss briefly features of Microcontroller and resources in advanced microcontroller

5 Mark Question:

1. What are the benefits of having RISC architecture?.
2. Give the role of watch dog timer in PIC microcontroller.?
3. Define Embedded System, enlist five examples of embedded system.
4. Write a note on WREG in PIC MCU.
5. Write a note on PIC18 file register.
6. What type of architecture is there in PIC micro controller? Why?
7. What are the benefits of having RISC architecture?
8. Write a note on PIC18 Status register.
9. Give the role of watchdog timer in PIC microcontroller?
10. Write a short note on I2C bus in PIC microcontroller.
11. Write a short notes on ADC interfacing in PIC micro controller.
12. Write short notes on CCP modules
13. Explain criteria for choosing a microcontroller.
14. Briefly explain the sensor interfacing using PIC micro controller.
15. While programming for LCD display, what initialization has to be done?
16. What are the aspects taken into account while keyboard is integrated?
17. For the H-bridge configured connected to a motor, how do control signal are applied from the micro controller.

18. Write a note on software technique for key debouncing?
 19. What is meant by data acquisition system?
 20. What are the advantages of LCD over LED display?
 21. What is meant by resolution of a converter?
 22. What is PWM, and how it is used in DC motor speed control?
 23. List out the signals used in keypad interfacing.
 24. What is Embedded System ? Write down five application of Microcontroller.
 25. Write a suitable assembly language program for configuring the ADC.
 26. What are the PIC 18 family device?
 27. Write a C18 program to toggle all the bits of Port A continuously.
 28. Write an assembly language program for BCD to binary conversion using PIC18F4520.
 29. Write a C18 program to set bit RB0 and send it to RC7 after inverting it.
 30. Draw the pin diagram of PIC18F4520 microcontroller and explain each pin function.
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B.Sc.-III General Science Semester -VI Examination, _____

ELECTRONICS Paper -XVI (BET604)

Subject Code: 18013

Question Bank

Q. 1 Define following Term/Answer in one sentence

[2 Marks]

- 1) Define Unit impulse
- 2) Give the mathematical and graphical representations of a unit sample, unit step sequence.
- 3) What is meant by impulse response?
- 4) What is meant by LTI system?
- 5) State the Sampling Theorem.
- 6) Definition of Artificial Intelligence
- 7) Discrete Fourier Transform (DFT)
- 8) Distinguish between Fourier series and Fourier transform.
- 9) What is the relation between Fourier transform and z transform?
- 10) What is the use of Fourier transform?
- 11) Finite Impulse Response and Infinite Impulse Response.
- 12) Unit Step definition.
- 13) Definition of DSP.
- 14) Explanation of Signal Processing.
- 15) What is periodic and aperiodic signal.
- 16) What is LTI System.
- 17) FFT stands for.
- 18) What is ROC in Z transform.
- 19) What is AI.
- 20) Define unit impulse function?
- 21) What is Artificial Intelligence.
- 22) What do you understand by signal processing?
- 23) DFT stands for?
- 24) What FIR and IIR stands for.
- 25) What is filter.
- 26) List out the basic elements of DSP

Q.2 Attempt any two of the following

[10 Marks]

1. DFT explanation with its equation and solving example.
2. Definition of Signal with example and its types.
3. Z transform explanation with equation and properties.
4. State and proof of sampling theorem.
5. What are the advantages of DSP over Analog signal processing?
6. State and proof the properties of Z transform.
7. Find the Z transform of i) $x(n) = [(1/2)^n - (1/4)^n] u(n)$ ii) $x(n) = n(-1)^n u(n)$
8. Compute the DFT for the sequence. (1,1,1,1,1,0,0)
9. Discuss the properties of DFT.
10. Discuss the use of FFT algorithm in linear filtering.
11. Explain types of signals and system.
12. Explain IIR and FIR filter design.
13. Explain the principle and procedure for designing FIR filter using rectangular window
14. Explain Signal , give its classification with example.
15. Explain Artificial Intelligence and its applications.

Q.3 Attempt any four of the following.

[5 marks]

1. Explain Causal and Linear systems.
2. What are advantages of Digital filters.
3. What is sampling? State Sampling theorem.
4. What is difference between FIR and IIR filter.
5. Determine Z transform of: $x(n) = (1, 3, 5, 7, 2, 1)$
6. Give need of transformation.
7. Give need of transformation.
8. What are advantages of Digital filters.
9. Explain example of DSP
10. What is sampling? State Sampling theorem.
11. What are the properties of Z transform.
12. What are the types of signals.
13. What do you mean by radix-2 FFT?
14. Why FFT is needed?
15. What are the differences between DIF and DIT algorithms?
16. Determine the DFT of the sequence $x(n) = \{1, 1, -2, -2\}$
17. Compare FIR & IIR filter.
18. Compare Butterworth with chebychev filters.
19. What are the different types of filters based on impulse response?
20. What are the different types of filters based on frequency response?
21. Give the applications of DSP
22. Define discrete time signals and classify them
23. If the sampling frequency is 48 kHz, what is the frequency of the discrete time signal corresponding to a sinusoid at 1.2 kHz?
24. What are the advantages FFT over DFT?
25. Determine the Discrete Fourier transform $x(n) = (1, 1, 1, 1)$