

1.1.2023  
Suganya

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Reg. No. : .....

Name : .....

**Third Semester B.Sc. Degree Examination, January 2023**

**Career Related First Degree Programme under CBCSS**

**Group2(a)- Physics and Computer Applications**

**Vocational Course**

**PC 1371 : MICROPROCESSORS AND PROGRAMMING**

**(2019 --2020 Admission)**

Time 3 Hours

Max. Marks : 80

**SECTION – A**

Answer **all** questions. Each question carries **1** mark.

1. Define system bus.
2. Give two examples of first generation computers.
3. Which part of the microprocessor is also known as internal memory?
4. What type of instructions are software interrupts?
5. List out the instructions (a) to add two register contents (b) add memory , register and carry.
6. Which instruction is used for signed multiplication?
7. What is the need of interrupt?
8. Expand DW.

P.T.O.

9. Give the names of general purpose registers of 80386.
10. List out the names of advanced Pentium processors.

(10 × 1 = 10 Marks)

**SECTION – B**

Answer any **eight** questions. Each question carries **2** mark.

11. What do you mean by 'data width'?
12. Give the purpose of RQ/ GT signal pins.
13. List the control and status signals available in 8086.
14. What is the use of IP in 8086?
15. What is a linker?
16. Explain PROC and ENDP.
17. If INTO, NMI, INTR occurs at the same time, which will be serviced first? Why?
18. What do you mean by register? Discuss various registers of the 8086 microprocessor.
19. Explain the difference between simulator and emulator.
20. Compare NOP and HLT in detail.
21. Give the operating modes of 8259A.
22. Write short notes on even and odd memory banks in 8086.
23. What do you mean by multiplexing?
24. Describe the term bus cycles.

25. List the various types of instructions in an 8086 microprocessor.
26. Define microprocessor based systems? Give examples.

**(8 × 2 = 16 Marks)**

**SECTION – C [Short Essay]**

Not to exceed 120 words. Answer any **six** questions. Each question carries **4** marks.

27. Write down the difference between microprocessor and micro controller.
28. Explain any four differences between MACRO and PROCEDURE.
29. What are Assembler directives? Explain
30. Explain the Interrupt response structure of 8086..
31. Explain the following instructions with suitable examples (a) INR (b) DEC (c) CMP (d) CLC
32. What are the features of 80186 processors?
33. Differentiate between short, near and far jump instructions with examples..
34. Explain any three types of interrupts.
35. Write an assembly language programme to multiply two 8-bit numbers.
36. Write an assembly language programme to add n numbers.
37. Write an assembly language programme to display a string of words.
38. Write notes on the registers of 80486 microprocessor.

**(6 × 4 = 24 Marks)**

**SECTION – D [Long Essay]**

Answer any **two** questions. Each question carries **15** marks.

39. Sketch the minimum mode operation of **8086** and explain its operation.
40. What are the sources of interrupts **Briefly** explain the steps taken by the processor to execute an interrupt instruction
41. With the help of a neat diagram **explain** the architecture of Intel 8086 microprocessor.
42. Explain the pin diagram and signals of **Intel 80386** microprocessor.
43. Explain with example various **addressing modes** of Intel 8086.
44. Write notes on
  - (a) Control transfer instructions
  - (b) Processor control instructions

Give any 5 instructions of each category with suitable examples.

**(2 × 15 = 30 Marks)**

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Reg. No. : .....

Name : .....

**Third Semester B.Sc. Degree Examination, January 2023**

**Career Related First Degree Programme under CBCSS**

**Physics and Computer Applications**

**Core Course**

**PC 1341 — ELECTRODYNAMICS**

**(2014 – 2018 Admission)**

Time : 3 Hours

Max. Marks : 80

**SECTION – A**

Very short answer type questions. Answer all questions.

1. What do you mean by Electric field intensity at a point?
2. Explain Gauss's law in electrostatics.
3. What will be the electrostatic potential inside a Spherical shell of radius 'R' which carries a uniform surface charge, set reference point at infinity?
4. Explain the term atomic polarizability.
5. What is Ampere's law?
6. What do you mean by Paramagnetism?
7. What is Ohm's law?
8. What do you mean by wavenumber? What is the SI unit of wave number?
9. At resonance, the power factor of series LCR circuit is \_\_\_\_\_
10. Discuss ideal current source.

**(10 × 1 = 10 Marks)**

P.T.O.

## SECTION – B

Short answer type questions. Answer any **eight** questions carrying **2** marks each.

11. What are the properties of Electric lines of forces?
12. Discuss about the Energy of a point charge distribution.
13. What do you mean by polarisation. ~~explain~~ the term Susceptibility?
14. Explain Amperes circuital theorem. ~~find~~ the magnetic field due to a long straight conductor
15. Explain Curies law of Paramagnetism.
16. Compare electrostatics and magnetostatics.
17. Explain Maxwell's electromagnetic equations.
18. Mention the disadvantages of Ohm's law.
19. What are electromagnetic waves ~~explain~~ its properties.
20. Explain resonance in series LCR circuit.
21. Explain Nortons theorem.
22. What is the use of Maxwells L-C bridge?

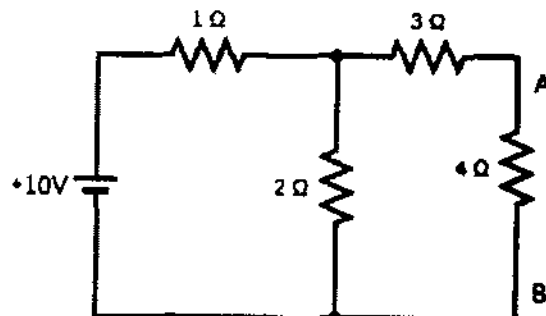
(8 × 2 = 16 Marks)

## SECTION – C

Answer any **six** questions. Each question carrying **4** marks.

23. A positive charge  $q$  exerts a force of magnitude  $-0,20\text{ N}$  on another charge  $-2q$ . Find the magnitude of each charge if the distance separating them is equal to 50 cm.
24. A sphere of radius  $R$  carries a polarization  $\vec{P}(\vec{r}) = k\vec{r}$  where  $k$  is a constant and  $r$  is the vector from the center. Calculate the bound charges  $\sigma_b$  and  $\rho_b$ .
25. The magnetic susceptibility of silicon is  $-0.4 \times 10^{-5}$ . Calculate the flux density and magnetic moment per unit volume when magnetic field of intensity  $5 \times 10^5\text{ A/m}$  is applied.

26. Show that the magnetic field cannot do any work on a particle, i.e., cannot change its energy.
27. A cylindrical bar magnet is kept along the axis of a circular solenoid. If the magnet is rotated about its axis, find out whether an electric current is induced in the coil.
28. A plane electromagnetic wave is incident on a plane surface of area  $A$  normally and is perfectly reflected. If energy  $E$  strikes the surface in time  $t$ , then find the average pressure exerted on the surface?
29. A 240 V, 50 Hz AC supply is applied across a coil of 0.08 H inductance and  $4 \Omega$  resistance connected in series with a capacitor of  $8 \mu F$ . Calculate the following
- Impedance of the circuit
  - Power factor
  - Q-Factor at series resonance.
30. The equation for an alternating current is given by  $i = 77 \sin 314 t$ . Find the peak value, frequency, time period and instantaneous value at  $t = 2 \text{ ms}$ .
31. Calculate the Thevenin resistance across the terminal A – B for the following circuit.



(6 × 4 = 24 Marks)

#### SECTION – D

Answer any **two** questions. Each question carries **15** marks.

32. What do you mean by electric field intensity? Find out the electric field due to a uniformly charged spherical shell and sphere? Represent it graphically.
33. Discuss the physical significance of bound charges produced due to polarization.

34. Derive expression for magnetic field due to a straight conductor carrying a steady current using Biot Savart's law.
35. Explain Owens bridge and its significance.

**(2 × 15 = 30 Marks)**

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