

J.S.University

Assignment For B.Tech 2NDsem.

The Assignment will consist of two parts, A and B. Part A will have 5 short answer questions(40-60 words) of 4 marks each. Part B will have 2 long answer questions of 10 marks each

All questions are compulsory.

These Assignments should be completed and submitted in written form by the student to his/her respective Faculty/Examiner. Assignment Submission Dates are:JUNE-2023

List Of Suggested Questions

The list of suggested questions are for students to practice. Although optional, we recommend that students solve these questions, as they will help them in preparing for exams as well as in clearing the important concepts of the subject.

List of Practicals and suggested practicals

The list of practical's should be done by the students in their Lab Sessions. These are the basic practical's, which each student should be able to do himself independently. While the list of suggested practicals are optional, but it is recommended that students should perform those practical so as to have a thorough knowledge of the subject

Education Delivery Schedule (EDS)

As per University Semester scheme, the minimum contact hours of each paper has been Divided into two hours theory and practical class.

The faculty will maintain this attendance paper wise for his/her batch.

J.S. UNIVERSITY

Cover page of Assignment

ID NUMBER

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NAME

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COURSE

B.Tech.....

STREAM

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SEMESTER

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SUBJECT CODE

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SUBJECT NAME

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Assignments will be completed by the Student in his/her own handwriting.

Subject Name
Electronic Engineering
Electrical Engineering
Engineering Physics II
Engineering. Chemistry
Basic Manufacturing Process
Mathematics-II

BTEC-21
ELECTRONICS ENGG.

Part A

1. Explain the PN-junction diode. Also define the depletion layer?
2. Explain the VI-Characteristics Graph for PN-Junction Diode?
3. Explain the Zener effect and Avalanche effect of Diode?
4. Explain the “Bipolar Junction Transistor”?
5. Explain the Inverting and non-inverting Amplifiers?

Part-B

1. Explain Different types of MOSFET in detail?
2. Explain the principle of CRT with its Block diagram?

BTEE-21
BASICELECTRICAL ENGG.

Part A

- 1 Explain kirchhoff's current and voltage law?
2. Explain the Star-Delta Transformation?
3. Define Sinusoidal, square and triangular waveforms?
4. Derive the EMF equation of single phase transformer?
5. Describe Hysteresis and eddycurrent losses?

Part B

1. Derive Maximum PowerTransfer theorem?
2. Derive EMF equation of generator and torque equation of motor?

BTAS-23

ENGINEERING PHYSICS-II

PART-A

1. The density of copper metal is 8.95 g cm^{-3} . If the radius of copper atom is 127.8 pm, is the copper unit cell simple cubic, body centred cubic or face-centred cubic? (At mass of Cu = 63.54 g mol^{-1} and $N_A = 6.02 \times 10^{23} \text{ mol}^{-1}$)?
2. Distinguish between crystalline solid and amorphous solid ?
3. Calculate the packing efficiency for bcc lattice ?
4. A coil of wire 0.25 m long and having 400 turns carries a current of 15 A. Find magnitude of magnetic field strength. Compute the flux density, B, if the coil is in vacuum.?
5. Compute the flux density inside a bar of chromium that is positioned within a coil of wire 0.25 m long and having 400 turns, carrying a current of 15 A. Magnetic susceptibility of chromium is 3.13×10^{-4} . Also compute magnetization of bar of chromium.?

PART-B

1. Elucidate the formation of a N-type and P-type semiconductors ?
2. Explain the formation of depletion region and barrier potential in PN junction diode. ?

BTAS-25

[ENGINEERING CHEMISTRY]

PART-A

1. Write Lewis structures for (a) XeF_4 , (b) PF_5 , (c) BrF_3 , (d) TeCl_4 , (e) ICl_2^- . Give the formal charge and oxidation number for each atom.
2. (I) XeF_4 (II) PF_5
3. For the following species, write Lewis dot structures, predict the molecular geometry, estimate all bond angles (to $\pm 2^\circ$), and give the hybridization of the central atom: a) ClO_2^- ; b) SiF_6^{2-} ; c) CrO_4^{2-} ; d) XeF_2 ?
4. A natural linear polymer of 2-methyl-1,3-butadiene becomes hard on treatment with sulphur between 373 to 415 K and -S-S-bonds are formed between chains. Write the structure of the product of this treatment?
5. To have practical applications, why are cross-links required in rubber?
6. What is the structural difference between HDP and LDP? How does the structure account for different behaviour and nature, hence using a polymer?

PART -B

1. What is the role of benzoyl peroxide in addition to the polymerisation of alkenes? Explain its mode of action with the help of an example.?
2. Synthetic polymers do not degrade in the environment for a long time. How can biodegradable synthetic polymers be made? Differentiate between biopolymers and biodegradable polymers and give examples of each type.?

BASIC MANUFACTURING PROCESS

Part A

Q1: Explain any four Mechanical Properties of Material?

Q2: Define different types of Steel and its uses?

Q3: Differentiate between hot-working and cold-working?

Q4: Explain Die-casting and its uses?

Q5: Explain Resistance welding?

Part B

Q1: Describe Shaper-Planer machine with its line diagram?

Q2: Explain the Heat-treatment process of carbon steels?

BTAS – 22

ENGG.MATHEMATICS – II

PART – A

1. Solve the LDE $= \frac{dy}{dx} = \left[\frac{1}{1+x^3} \right] - \left[\frac{3x^2}{1+x^2} \right] y$.

2. Solve the following differential equation

$$\frac{dy}{dx} + (\sec x)y = 7$$

3. What is the Laplace's equation ?

4. Define the Gauss Law ?

5. Determine the initial value $f(0^+)$, if

$$F(s) = \frac{2(s+1)}{s^2+2s+5} .$$

PART – B

1. What will be the initial value of the interpolation reaction for the following expression .

$$Y(s) = \frac{2s+1}{(s+1+j)(s+1-j)}$$

2. Define : partial differentiation rule and application ?