# JAIN UNIVERSITY

Estd u/s 3 of the UGC Act, 1956

## MODEL QUESTIONS FOR PART B

**Subjects in which model questions included are**

Biochemistry
Biotechnology
Computer Science
Chemistry
Civil Engineering
Culture Studies
Economics
Electronics
Electrical Engineering
English
Management
Mathematics
Mechanical Engineering
Microbiology
Physics
Psychology

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**Model Questions in Bio Chemistry**

I One Mark Questions

**1**. Which of the following is true of epitopes associated with antigens from an exogenous source?
a) Presented in association with Class I MHC
b) Presented to T helper lymphocytes
c) Presented to T cytotoxic lymphocytes
d) Associate with MHC molecules within the ER

**2**. Membrane bound Ig is just one part of a complex known as the B cell receptor complex. Additional accessory proteins are termed:
a) Iga and Igb b) CD4 and CD8
c) Ca and Cb d) CD3 and TcR

**3**. If a pre-B cell fails to productively rearrange the heavy chain genes on both chromosomes, the result is:
a) the light chains will then attempt to rearrange
b) the cell will undergo apoptosis
c) the cell will begin to divide
d) the cell will become an NK cell

II Five Marks Questions

1. What are ionophores ? Give examples.
2. Write a note on Glycogen storage disorders.
3. Explain Chromosome banding.

**Model Questions in Biotechnology**

I One Mark Questions

1. _____ transport involves processes such as osmosis and diffusion.

    a. passive
    b. active
    c. mechanized
    d. extracellular

2. The cell plasma membrane is composed chiefly of two layers of _____ with globular _____ floating in these layers.

    a. proteins, lipids
    b. cholesterol, proteins
    c. lipids, proteins
    d. pinocytosis, phagocytosis
    .

3. Central (primary) lymphoid organs
    a. are efficient in exposing T cells to foreign antigen
    b. filter blood and trap blood-borne antigens
    c. provide the microenvironment for the maturation of T and B cells
    d. line the mucosal surfaces of the body for efficient antigen contact

II Five Mark Questions

**Write short notes on the following.**

1. Bacterial Transposons
2. Ribozymes
3. NK cells

## Model questions in Computer Science

**I** One mark questions

1. The number of integer solutions ($\geq 0$) of the equation $x + y + z + u = 7$ is

   (a) 120 (b) 130 (c) 140 (d) 150

2. Let $S = \{1, 2, 3, \ldots, 30\}$. The number of subsets A of S each containing 5 numbers and the smallest number in each subset A is 5 is

   (a) 11650 (b) 12650 (c) 13000 (d) 13650

3. Let $A = \{1, 2, 3, 4, 5\}$, $B = \{x, y, z, u\}$, $A_1 = \{2, 3, 5\}$ and $g: A_1 \to B$. The number of ways
   in which g can be extended to a function $f: A \to B$ is

   (a) 4 (b) 9 (c) 16 (d) 25

II Five marks questions

1. For any three sets A, B and C, prove that $(A \cap B) \cup C = A \cap (B \cup C)$ if and only if $C \subseteq A$.

2. Consider two functions $f: A \to B$ and $g: B \to C$. Prove the following.

   (i) If g o f is one – one, then f is one – one.
   (ii) If g o f is onto, then g is onto.

**Model Questions in Chemistry**

**I One Mark Questions**

1. Which of the following is correct relation between $^0$C and $^0$F?

   A) $^0C = \frac{5}{9}(^0F + 32)$ B) $^0F = \frac{9}{5}(^0C - 32)$

   C) $^0F = \frac{9}{5}(^0C + 32)$ D) $^0C = \frac{5}{9}(^0F - 32)$

2. Extent of ionisation of acetic acid is maximum in

   A) Water B) Ethanol

   C) Liquid ammonia D) None of these

3. Structure of iodine heptafluoride is

   A) Trigonal bipyramid B) Square planar

   C) Pentagonal bipyramid D) Octahedral

**Model Questions in Civil Engineering**

I One Mark Questions

1 Two primary air pollutants are
(A) sulphur oxide and ozone (B) nitrogen oxide and peroxyacetylnitrate
(C) sulphur oxide and hydrocarbon (D) ozone and peroxyacetynitrate

2 Compaction by vibratory roller is the best method of compaction in case of
(A) moist silty sand
(B) well graded dry sand
(C) clay of medium compressibility
(D) silt of high compressibility

3. The type of surveying in which the curvature of the earth is taken into account is called
(A) Geodetic surveying (B) Plane surveying
(C) Preliminary surveying (D) Topographical surveying

**II Five Mark Questions**

**1.**A soil has dry unit weight $\ddot{U}_d$ = 12 kN/m3 and saturated unit weight $\ddot{U}_{sat}$ = 17.5 kN/m3. Determine the void ratio and specific gravity of the soil particles.

2. What is a piezometer? Explain how a piezometer can be used to measure –ve gauge pressure.

**Model Questions in Culture Studies**

I One Mark Questions

1. Which are the following belong to cultural studies

   a. heritage, b. Law of motion, c. spirituality, d. Communication

2. Who is marginalised in India?

   a. Foreigners, b. Dalits, c. Children d. Labour

3. Which is the most popular media today?

   a. Film, b. Television, c. Radio d. Theatre

II Five Mark Questions

1. Importance of cultural values in Education
2. Write a review on a place of cultural importance.
3. What are the socio-cultural concerns reflected in the present day art practices?

**Model Questions in Economics**

I One Mark Questions

1.Which of the following questions is *not* answered by the decisions that every society must make?
   a. What determines consumer preferences?
   b. What goods will be produced?
   c. Who will produce the goods?
   d. Who will consume the goods?

2. Which of the following phrases best captures the notion of efficiency?
   a. absolute fairness
   b. equal distribution
   c. minimum waste
   d. equitable outcome

3. The most common data for testing economic theories come from
   a. carefully controlled and conducted laboratory experiments.
   b. traditional economies.
   c. historical episodes of economic change.
   d. centrally planned economies.

II Five Mark Questions

1. What is current account convertibility?

2. What is controlled expansion policy?

3. What is Herphindel's index?

**Model Questions in Electronics**

I One mark questions

1. How many layers are present in the SCR?
   a) 6 b) 4 c) 3 d) none of the above

2. What is the difference of between stack of microprocessor and microcontroller?
   a) both stack memories are incremented from lower address.
   b) both stack memories are decremented from higher address.
   c) controller stack memory is incremented from lower address and processor stack memory is decremented from higher address.
   d) processor stack memory is incremented from lower address and controller stack memory is decremented from higher address.

3. Fourier Transform of a discrete time aperiodic signal is
   a) continuous and aperiodic b) discrete and periodic
   b) discrete and aperiodic d) continuous and periodic

II Five Mark Questions

**1.** Write an assembly level program of 8051 to count the number of Zeros and ones in a given byte.

2. Explain different modes of operations of enhancement MOSFET.

**Model Questions in Electrical Engineering**

**I One Mark Questions**

1. Electrical motor used in traction is a
   a) D.C. shunt motor b) Induction motor c) D.C. series motor d) None of these
2. LAP winding is used when the current per parallel path is
   a) Less than 200A b) greater than 200A c) greater than 200A and less than 300A
   d) greater than 100A and less than 200A
3. In a AC system when switch is closed at t = $0_+$, a charge free capacitor acts as
   a) Open circuit b) short circuit c) open or short circuit
   d) none of the above

**II Five Mark Questions**

1. A 50kVA, single phase transformer having turn ratio equal to 300/20 is connected to a 2200V, 50Hz supply. Calculate a) the secondary voltage on no load b) the approximate values of the primary and secondary currents on full load and c) the maximum value of flux.

2. A 6-pole, 480V, DC motor takes a armature current of 110A. The lap wound armature has 864 conductors. Calculate a) the speed b) the gross torque developed in the armature. Assume flux per pole as 0.05Wb and armature resistance as 0.2Ω.

**Model Questions in English**

I Mark Questions

1. Beowulf, the only important piece of literature surviving since the old English Period is a/an..
   a) Lyrical ballad. b) Prose narrative.
   c) Classical epic d) Anglo – Saxon epic.
2. The idea of the Canterbury Tale is believed to have been taken from Boccaccio's
   a) Recamerone b) Filostrato
   c) Confessio Amantis d) Polychronicon
3. Who is regarded as the 'Father of English Novel'?
   a) Daniel Defoe b) Samuel Richardson
   c) Samuel pepys d) John Banyan

II Five Mark Questions

1. What was the general status of women in the Victorian age?
2. Describe words worth's treatment of Nature?
3. What is post –modernism?
4. Write down chief tenets of Cultural materialism?

**Model Questions in Management**

I One Mark questions

1. A manager had a choice of hiring one of two candidates. Candidate A was bright and proactive. He was very emotional and needed to be `handled with care`. Candidate B was also bright but and introvert. B would only do a job when told to do it. The manager decided to choose A. Which word below best described what he did

   a) Adventurous decision making
   b) No risk decision making
   c) Decision making under risk
   d) Unconventional decision making

2. A Finance head was required to deal with a demand for salary increase. He told the employees who met her `We will see`. What type of response was this ?

   a) Crisis avoidance
   b) Crisis confrontation
   c) Crisis diffusion
   d) Crisis solution

3. `Word of mouth` marketing is often called

   a) Public relations marketing
   b) Buzz marketing
   c) Hype marketing
   d) Grapevine marketing

3. Getting people to come up with as many ideas as possible without evaluating them is called _____

   a) Rambling
   b) Rapid Firing
   c) Brainstorming
   d) Reflecting

**II Five mark questions**

1. `Leadership is about style and not about substance`. Do you agree?

2. How is the structure of an organization linked to its productivity

3. Why do people generally resist change? How does one manage change ?

**Model Questions in Mathematics**

I One Mark Questions

1. Rolle's theorem can be applied for $f(x) = x(x-1)$ on the interval $[0,1]$.
   a) Yes b) No c) Insufficient data d) None

2. $\int_0^1 \frac{1}{x}\, dx =$
   a) $\infty$ b) 0 c) 1 d) -1.

3. $\lim_{x\to\infty}\left(\frac{\sin x}{x}\right) =$
   a) 0 b) 1 c) $\infty$ d) $\frac{\pi}{2}$

II Five Mark Questions

1. Prove that a function which is differentiable has to be continuous

2. Prove that a cyclic group is Abelian

3. Prove by Venn diagram the distributive laws of union over intersection

**Model Questions in Mechanical Engineering**

**I One Mark questions**

1. In which of the following welding processes the non-consumable electrode is used?
    a) TIG welding
    b) Laser welding
    c) MIG welding
    d) Plasma Are welding

2. Confessor capacity is
    a) Volume of air delivered
    b) Volume of air sucked
    c) Both (a) and (b)
    d) None of the above

3. In a 4-stroke I.C. engine, the moment during the compression stroke is
    a) positive throughout
    b) negative throughout
    c) positive during major portion of the stroke
    d) negative during major portion of the stroke

**II Five Mark Questions**

**1.** What is Machinability & what are the parameters affects the machinability

2. Define Kirchoff's law and explain the same with suitable example

**Model Questions in Microbiology**

I One Mark Questions

1. Who first developed the process of colony purification on solid media?
    a. Louis Pasteur
    b. Robert Koch
    c. Fannie Hesse
    d. Richard Petri

2. Shine Dalgarno sequence is:
    a. Found at the 3’ end of a Prokaryotic gene
    b. Found in 16 S rRNA
    c. complementary to an mRNA sequence
    d. Located upstream of AUG initiation codon of a prokaryotic mRNA.

3. The net gain of ATP molecules resulting from glycolysis in microorganisms
    a. Two
    b. Four
    c. Thirty six
    d. Thirty eight

II Five Mark Questions

1. Compare and contrast between SEM and TEM.
2. Comment on the alternative pathways for energy metabolism in microorganisms.
3. Differentiate between prokaryotic and eukaryotic mRNA.

**Model Questions in Physics**

I One Mark Questions

1. In an isolated hydrogen atom, the energy of the first excited state (in eV) is

   (a) -13.6 (b) -3.4 (c) -1.6 (d) +13.6

2. The frequency of an incident photon in a Raman scattering experiment is x units. The frequency of an anti-stokes photon can **not** be

   (a) $x^2$ (b) 2x (c) 3x (d) x/2

3. A silicon transistor is biased with a voltage divider bias circuit. If $V_{cc}$=25V, $R_1$=10kΩ, $R_2$=2.2kΩ, Rc=3.6kΩ and $R_E$=1kΩ, what is the emitter voltage?

   a) 6.7V (b) 5.3V (c) 4.9V (d) 3.8V

II Five Mark Questions

1. Explain briefly the τ – θ puzzle in elementary particles.

2. What are the conditions for a crystal to be ferroelectric?

3. Estimate the increase in confinement energy of an electron when the cell dimension decreases by one angstrom.

**Model Questions in Psychology**

I One Mark Questions

1. Fill in the blanks with appropriate words:

a. The concept of 'Unconditional Positive Regard' was widely used by _____

b. The formula to calculate IQ is_____

c. The _____ and _____ are the two important parts of the neuron which helps in carrying impulses to and from it.

II Five Mark Questions

1. What is meant by 'reliability of a psychometric test'
2. Name the different kinds of learning disabilities.
3. Outline the order of needs in the 'Need Hierarchy Theory' by Maslow