

Seat No.	
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**M.Sc. (Semester – II) (New) (CBCS) Examination, 2017**  
**ELECTRONICS SCIENCE**  
**FUNDAMENTALS OF ELECTRONICS (OET)**

Day &amp; Date: Friday, 28-04-2017

Max. Marks: 70

Time: 10.30 AM to 01.00 PM

- N.B. :** 1) Q.1 and Q.2 are **compulsory**.  
 2) Attempt **any three** questions from Q. no. 3 to Q. no. 7.  
 3) Figures to the **right** indicate **full marks**.

**Q.1 A) Select correct alternatives. 06**

- 1) The unit of resistance is  
 a) amp.                      b) ohms                      c) volts                      d) watts
- 2) P-n junction diode conducts in  
 a) Reverse biasing                      b) Forward biasing  
 c) self biasing                      d) none of these
- 3) Current in the FET is  
 a) Two types                      b) One type  
 c) Reverse type                      d) Both a and b
- 4) When compare to other filters active filter gain is  
 a) Low              b) High              c) Moderate              d) None of these
- 5) Op.Amp.is basically  
 a) coupled amplifier                      b) differential amplifier  
 c) direct coupled amplifier                      d) none of these
- 6) The most commonly used IC in the constructed of astable multivibrator is  
 a) 741              b) 555              c) 556              d) 7400

**B) State True or False 04**

- 1) Passive elements dissipate power.
- 2) P-n Junction diode is used to conduct the current in only one direction.
- 3) FET is having very high input impedance than BJT.
- 4) Gain decreased -20 db per decade in first order active filter.

**C) Fill in the blanks. 04**

- 1) Out of passive device is \_\_\_\_\_ than its input.
- 2) The basic material of LED is \_\_\_\_\_.
- 3) The mathematical operations can be performed by the circuits constructed using IC \_\_\_\_\_.
- 4) The comparator compares the magnitude of \_\_\_\_\_ input signals.

<b>Q.2</b>	<b>Write short notes.</b>	
	a) Passive and active elements and their uses.	<b>05</b>
	b) Working of Solar cell.	<b>05</b>
	c) Hybrid parameters of a transistor	<b>04</b>
<b>Q.3</b>	a) Explain the working of a voltage divider circuit and mention its application.	<b>08</b>
	b) Define Ohm's law. How it is used in a circuit.	<b>06</b>
<b>Q.4</b>	a) Explain the construction and working of solar cell and mentions its applications.	<b>08</b>
	b) Explain the use of Thevenin's theorem to simply a network.	<b>06</b>
<b>Q.5</b>	a) With a neat diagram explain the working of an op. amp. Integrator and derive the equation of output parameter and draw the output waveform under sine and square wave input.	<b>08</b>
	b) Draw the input and output characteristics of a transistor in CE and list its applications.	<b>06</b>
<b>Q.6</b>	a) Explain the working of instrumentation amplifier and mention its applications.	<b>08</b>
	b) Draw the circuit diagram of FET amplifier and explain its working.	<b>06</b>
<b>Q.7</b>	a) Draw the circuit diagram of an op. amp. comparator and justify its working with input and output waveforms.	<b>08</b>
	b) Design a DC power supply capable of outputting 15 volts/1A using 3-pin regulator IC.	<b>06</b>

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**M.Sc. (Semester – II) (New) (CBCS) Examination, 2017**  
**PHYSICS (APPLIED ELECTRONICS)**  
**ELECTRONIC INSTRUMENTATION (OET)**

Day & Date: Friday, 28-04-2017

Max. Marks: 70

Time: 10.30 AM to 01.00 PM

- Instructions: :
- 1) **Answer any five questions.**
  - 2) **Questions 1 and 2 are compulsory.**
  - 3) **Attempt any three from Q.3 to Q.7.**
  - 4) **Figures to the right indicate full marks.**
  - 5) **Use of nonprogrammable calculator is allowed.**

**Q.1 A) Choose correct alternatives:**

**08**

- 1) It is ability of the sensor to indicate the same output over a period of time for a constant input
  - a) Stability
  - b) Resolution
  - c) Impedance
  - d) Error
- 2) A Peizo-electric crystal generates voltage when subjected to \_\_\_\_\_ force.
  - a) Electrical
  - b) Mechanical
  - c) Gravity
  - d) All of the above
- 3) Potentiometer transducers are used for the measurement of-
  - a) Pressure
  - b) Displacement
  - c) Humidity
  - d) Both (a) and (b)
- 4) With the increase in the intensity of light, the resistance of a photoconductor cell-
  - a) Decreases
  - b) Increases
  - c) Remains same
  - d) Changes randomly
- 5) An rms reading voltmeter can accurately measure voltage of-
  - a) Sine waveforms
  - b) Square waveforms
  - c) Saw tooth waveforms
  - d) All of these
- 6) The Q-meter works on the principle of-
  - a) Parallel resonance
  - b) Series resonance
  - c) Both (a) and (b)
  - d) Neither series resonance nor parallel resonance.
- 7) Which term applies to the maintenance of a given signal level until the next sampling?
  - a) Aliasing
  - b) Holding
  - c) Shannon frequency sampling
  - d) Stair-stepping
- 8) Isolation amplifier actually operates on the principle of-
  - a) Attenuation
  - b) Filtering
  - c) Clipping
  - d) Amplification

<b>B)</b>	<b>State True or False:</b>	<b>06</b>
	1) Passive transducer is based on principle of energy conversion.	
	2) LVDT is a non-linear transducer.	
	3) Thermistor has negative coefficient of temperature.	
	4) Negative feedback in amplifiers improves the stability.	
	5) Piezoelectric transducer can measure static pressure.	
	6) AC bridges are used for the measurement of inductance and capacitance	
<b>Q.2</b>	<b>Write a short note on the following:</b>	
	<b>A)</b> Velocity transducer	<b>05</b>
	<b>B)</b> I to V converter	<b>05</b>
	<b>C)</b> Features of Digital Multimeter	<b>04</b>
<b>Q.3</b>	<b>A)</b> What is meant by transducer? Give the factors to be considered for selecting a transducer.	<b>06</b>
	<b>B)</b> Discuss the transducer for the measurement of-	<b>08</b>
	1) Furnace temperature	
	2) Linear displacement	
<b>Q.4</b>	<b>A)</b> State and brief out the desirable characteristics of Isolation Amplifier.	<b>06</b>
	<b>B)</b> What are the advantages and disadvantages of LVDT? Explain the principle of operation and working of LVDT with a suitable diagram.	<b>08</b>
<b>Q.5</b>	<b>A)</b> Explain the peak detector circuit. Where it is used?	<b>06</b>
	<b>B)</b> Explain with the circuit diagrams the log and antilog amplifiers	<b>08</b>
<b>Q.6</b>	<b>A)</b> Give a brief account of a digital frequency Meter	<b>06</b>
	<b>B)</b> Explain in brief the Hall effect.	<b>08</b>
<b>Q.7</b>	<b>State and explain the working principle of any TWO of the following:</b>	
	1) Techometer	<b>07</b>
	2) RMS Converter	<b>07</b>
	3) Proximity Detector	<b>07</b>





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**M.Sc. (Semester – II) (New) (CBCS) Examination, 2017**  
**CHEMISTRY**  
**INSTRUMENTAL METHODS OF ANALYSIS (OET)**

Day &amp; Date: Friday, 28-04-2017

Max. Marks: 70

Time: 10.30 AM to 01.00 PM

- N.B. :**
- 1) Attempt in **all five** questions.
  - 2) Section-I is **compulsory**.
  - 3) Attempt any **two** questions from Section-II and **any two** questions from Section –III.
  - 4) Answer to **all** questions should be written in same answer book.
  - 5) All question carry **equal** marks.
  - 6) Figures to the right indicate **full** marks.
  - 7) Use of **log tables** and **calculators** is allowed.

**Section – I**

**Q.1 Answer the following**

14

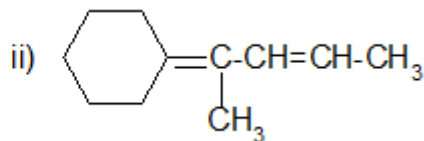
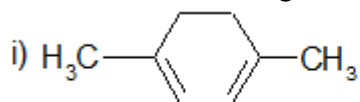
- a) Which is most abundant peak in benzene?
- b) Write the wavelength range of finger print region in IR.
- c) Predict the modes of vibration in ethane molecule.
- d) 1-Phenyl ethanol shows the base peak at m/z 107 due to \_\_\_\_\_ ion.
- e) Name the factors affecting chemical shift.
- f) What is the nuclear spin value for C<sup>12</sup> and O<sup>16</sup> nuclei?
- g) Name the detectors used in UV-visible spectrophotometer.
- h) What do you mean by base peak?
- i) Define absorbance.
- j) How will you distinguish between cis and trans 1, 3, 5 Hexatriene by UV?
- k) Define coupling constant.
- l) Name the different types of atomizers used in AAS.
- m) What is the function of nebulizer in ICP?
- n) Define spin-spin relaxation.

**Section – II**

- Q.2**
- a) Explain the effect of following factors on vibrational frequencies in IR spectroscopy **07**
  - b) Explain the fragmentation pattern in t-butyl alcohol and 1-butanol. **07**
- Q.3**
- a) Deduce the structure of an organic compound on the basis of following data: **07**  
Molecular Formula: C<sub>8</sub>H<sub>8</sub>O<sub>3</sub>  
IR -3400, 2900, 1740, 1600 and 820 cm<sup>-1</sup>  
NMR(ppm): 3.9δ(3H,s), 7.1 δ (2H,d, J=8Hz), 6.1v δ (2H,d, J=8Hz), 4,5 δ(1H,s)

b) Discuss the construction and working of plasma torch. **07**

**Q.4** a) With the help of Woodward and Fieser's rules Calculate the max values for following compounds. **07**



b) What is the basic principle of AAS? Explain the difference types of interference in AAS. **07**

### Section – III

**Q.5** a) Explain TMS is used as internal standard in PMR spectroscopy. **05**

b) Explain in brief Photomultiplier. **05**

c) Explain in the brief shielding effect. **04**

**Q.6** a) Explain in brief anisotropic effect. **05**

b) Discuss in brief FT-NMR. **05**

c) Describe fragmentation pattern of ethyl benzene. **04**

**Q.7** Write a notes (any three): **14**

a) Applications of ICP-AES

b) Spin-spin coupling

c) Applications of IR Spectroscopy

d) McLafferty rearrangements



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**M.Sc. (Semester – II) (New) (CBCS) Examination, 2017**  
**ENVIRONMENTAL SCIENCE**  
**ANALYTICAL TECHNIQUES AND INSTRUMENTATION (OET)**

Day & Date: Friday, 28-04-2017

Max. Marks: 70

Time: 10.30 AM to 01.00 PM

- Instructions: :
- 1) **Answer any five questions.**
  - 2) **All questions carry equal marks.**
  - 3) **Question 1 is compulsory.**
  - 4) **Answer any two from Q.No.2, 3, 4.**
  - 5) **Answer any two from Q.No.5, 6, 7.**

**Q.1 Select the answer among the following:**

**14**

- 1) Difference in electrical potential between an electrode and a reference electrode is measured by using \_\_\_\_\_
  - a) Electrical Conductivity Meter
  - b) Potentiometer
  - c) pH Meter
  - d) None of these
- 2) Turbidity in water is considered as \_\_\_\_\_ types of parameter.
  - a) Biological Parameter
  - b) Chemical Parameter
  - c) Physical Parameter
  - d) None of these
- 3) In GC-MS the column provides a surface for the components in the sample interacts is known as \_\_\_\_\_
  - a) Stationary phase
  - b) Mobile phase
  - c) interactive phase
  - d) None of these
- 4) Geiger Muller counters are used to detect radioactive emission, most commonly \_\_\_\_\_ and \_\_\_\_\_ rays.
  - a) Alfa and Beta rays
  - b) Beta and Gamma rays
  - c) Alfa and Gamma rays
  - d) All of these
- 5) Detection of metals and non-metals at ppq range is detected by using \_\_\_\_\_
  - a) ICPS
  - b) AAS
  - c) GC-MS
  - d) UV spectrophotometer
- 6) Piece of light microscope that gather and focuses light on specimen being viewed is known as
  - a) Objective Lens
  - b) Eyepiece Lens
  - c) Condenser Lens
  - d) Coarse Focus
- 7) In reverse phase HPLC
  - a) A hydrophobic stationary phase is combined with a polar mobile phase
  - b) A hydrophilic stationary phase is combined with a polar mobile phase
  - c) A hydrophilic stationary phase is combined with a non-polar mobile phase
  - d) A hydrophobic stationary phase is combined with a non-polar mobile phase.

- 8) X-ray diffraction fails to detect the presence of substances
- Comprising less than 5 percent of a mixture
  - Containing a magnetic field
  - Comprising elements with two or more isotopes
  - Containing a high concentration of a carbon
- 9) \_\_\_\_\_ method is used for the quantitative determination.
- Turbidometric Method
  - Titrimetric Method
  - Gravimetric Method
  - None of these
- 10) \_\_\_\_\_ system is used for the removal of particulate matter from industrial exhaust streams.
- Electrostatic precipitator
  - Bag filters
  - Wet Scrubber
  - All of these
- 11) Which of the following is not a step in atomic absorption spectroscopy?
- Calibration curve is constructed
  - Atoms absorb light
  - Particles are absorbed onto a stationary phase
  - A solution is vaporized
- 12) Which of the following is a cytoplasmic stain
- Eosin
  - Crystal Violet
  - Carmine
  - Orcein
- 13) What is shielding in NMR
- Using a curved piece of metal to block an opponent's attack.
  - Putting metal around an Rf source.
  - Magnetic moment blocks the full induced magnetic field from surrounding nuclei.
  - Blocking parts of a molecule from Rf radiation
- 14) Electrostatic Precipitators are fully functional in \_\_\_\_\_ following industry
- Dairy Industry
  - Pharmaceutical Industry
  - Thermal Power Plants
  - Tanneries

- Q.2** Define conductance of solution. Explain calibration of conductivity meter and add a note on factors affecting conductance of solution. **14**
- Q.3** Explain with help of schematic diagram the operations of a double beam UV spectrophotometer. Elaborate its advantages over single beam spectrophotometer. **14**
- Q.4** What is Mass Spectroscopy? Describe role and different types of mass spectrometer detectors. **14**
- Q.5** **Write short notes on the following:** **14**
- Gel Electrophoresis
  - Working of Flame Photometer
- Q.6** **Write a brief with suitable illustration on the following:** **14**
- Role of RFLPs in DNA Fingerprinting
  - Need of reference electrode in pH meter
- Q.7** **Write an account on the following:** **14**
- Working of Light Microscope
  - Turbidity Meter

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**M.Sc.(Semester – II) (New) (CBCS) Examination, 2017  
MATHEMATICS**

**FUNDAMENTAL IN MATHEMATICS (OET)**

Day & Date: Friday, 28-04-2017

Max. Marks: 70

Time: 10.30 AM to 01.00 PM

- N.B. :** 1) Attempt **five** questions.  
 2) Q no. **1** & Q. no. **2** are **compulsory**.  
 3) Attempt **any three** questions from Q. no. 3 to Q. no. 7.  
 4) Figures to the **right** indicate **full** marks.

**Q.1 A) Choose the correct Answer: 07**

- 1) Vector space is defined over a \_\_\_\_\_.  
 a) Group    b) Ring    c) Field    d) None of these
- 2) A subset of Linearly independent vectors is \_\_\_\_\_.  
 a) Linearly dependent  
 b) Linearly independent  
 c) May or may not be linear dependent  
 d) None of these
- 3) If  $T: v \rightarrow V$  is the identity map, then Rank  $T =$  \_\_\_\_\_.  
 a) 0                      b) 1                      c) 2                      d)  $\dim V$
- 4) If no. of equations equal to no. of unknowns then \_\_\_\_\_ solution exists for Non-Homogeneous system of equation.  
 a) Unique    b) Infinite    c) No solution    d) Finite
- 5) If  $A$  is a square matrix of order 4 with rank 2 &  $B$  is a square matrix of order 4 whose rank is 4 then the rank of  $AB$  \_\_\_\_\_ is  
 a) 1                      b) 2                      c) 3                      d) 4
- 6) If  $\dim V = n$  then the number of vectors in a basis of  $V$  is \_\_\_\_\_.  
 a) Less than  $n$                       b) Equal to  $n$   
 c) Greater than  $n$                       d) None of these
- 7) If  $T: V(F) \rightarrow W(F)$  is a linear map &  $V$  is finite dimensional, then Rank  $(T) =$  \_\_\_\_\_.  
 a)  $\dim V + \text{nullity}(T)$                       b)  $\dim V - \text{nullity}(T)$   
 c)  $\text{nullity}(T) - \dim V$                       d)  $\text{nullity}(T)$

**B) State whether true or false. 07**

- 1) Any system of linear equations has at least one solution.
- 2) The rank of  $n \times n$  matrix is at most  $n$ .
- 3) An elementary matrix is always square.
- 4) The zero vector space has no basis.
- 5) The dimension of  $f_n(F)$  is  $n$ .

- 6) A vector space may have more than one zero vector.  
 7) The empty set is linearly dependent.

- Q.2** **A)** Find the rank of matrix  $A = \begin{bmatrix} 2 & 1 & 1 \\ 4 & 2 & 2 \\ 1 & 2 & 2 \end{bmatrix}$  **03**
- B)** Show that the inverse of matrix is unique. **04**
- C)** Show that  $T: \mathbb{R}^2 \rightarrow \mathbb{R}^2$  by defined  $T(a_1, a_2) = (a_1, -a_2)$   $T$  is linear transformation. **04**
- D)** Define Basis & Dimension of vector space. **03**
- Q.3** **A)** Prove that any Intersection of subspace of vector space is subspace. **07**
- B)** Show that the following system of equation is consistent & find its solution. **07**
- $$\begin{aligned} x_1 - x_2 + x_3 &= 2 \\ 3x_1 - x_2 + 2x_3 &= -6 \\ 3x_1 + x_2 + x_3 &= -18 \end{aligned}$$
- Q.4** **A)** Prove that If a vector space  $V$  is generated by a finite set  $S$  then some subset of  $S$  is basis for  $V$  Hence  $V$  has a finite basis. **08**
- B)** Determine whether or not the following vectors form a basis of  $\mathbb{R}^3$ . **06**
- 1)  $(1, 1, 2), (1, 2, 5), (5, 3, 4)$
- 2)  $(1, 2, 1), (2, 9, 0), (3, 3, 4)$
- Q.5** **A)** State & prove Rank-Nullity theorem. **08**
- B)** Prove that: If  $V$  be vector space &  $S_1 \subseteq S_2 \subseteq V$  &  $S_1$  is Linearly dependent then  $S_2$  is linearly dependent. **06**
- Q.6** **A)** Show that  $T: \mathbb{R}^2 \rightarrow \mathbb{R}^2$  defined by  $T(a_1, a_2) = (a_1, a_2)$  is both one-one and onto. **07**
- B)** Explain the properties of Determinants with example. **07**
- Q.7** **A)** Define Elementary matrix & explain elementary matrix operations. **06**
- B)** Define  $T: \mathbb{R}^2 \rightarrow \mathbb{R}^3$  by **08**
- $$T(a_1, a_2) = [a_1, +3a_2, 0, 2a_1 - 4a_2]$$
- $$U: \mathbb{R}^2 \rightarrow \mathbb{R}^3 \text{ by } U(a_1, a_2) = [a_1 - a_2, 2a_1, 3a_1 + 2a_2]$$
- Consider  $\beta$  &  $\gamma$  be the ordered basis for  $\mathbb{R}^2$  &  $\mathbb{R}^3$  respectively then show that
- 1)  $[T + U]_{\beta}^{\gamma} = [T]_{\beta}^{\gamma} + [U]_{\beta}^{\gamma}$
- 2)  $[\alpha T]_{\beta}^{\gamma} = \alpha [T]_{\beta}^{\gamma}$



- 8) If a perfect coin is tossed twice then probability of getting both the head is \_\_\_\_\_.
- a)  $\frac{1}{2}$                       b)  $\frac{1}{8}$                       c)  $\frac{1}{4}$                       d)  $\frac{3}{4}$
- 9) If X follows binomial distribution with parameters n and p then \_\_\_\_\_
- a) mean = variance                      b) mean < variance  
c) mean > variance                      d) none of these
- 10) For testing simple hypothesis against a simple alternative, which of the following values of  $\alpha$  and  $\beta$  is not correct?
- a)  $\alpha = 0.05$  and  $\beta = 0.80$                       b)  $\alpha = 0.05$  and  $\beta = 0.98$   
c)  $\alpha = 0.10$  and  $\beta = 0.70$                       d)  $\alpha = 0.5$  and  $\beta = 0.5$

**B) State whether true or false. 04**

- 1) For Bernoulli distribution mean is always less than variance.
- 2) Nonparametric test does not make any assumption regarding the form of the population.
- 3) For normal distribution, mean = median = mode.
- 4) Rejecting null hypothesis when it is actually true is the type II error.

**Q.2 A) Answer the following: 06**

- 1) Define the terms Arithmetic mean, Median and mode.
- 2) If X has Poisson distribution such that  $P(X=1) = 2P(X=2)$ . Find  $P(X=0)$ , mean and variance.

**B) Write short notes on following. 08**

- 1) Addition and Multiplication rules of probability
- 2) Run test

**Q.3 A) What is dispersion? 07**

- Define
- 1) Standard deviation
  - 2) Quartile deviation
  - 3) Coefficient of variation

**B) The marks of 25 students are given below. 07**

Marks	0-10	10-20	20-30	30-40	40-50
students	3	4	10	-----	1

Calculate the missing frequency and hence obtain the values of mean, median and mode.

**Q.4 A) Define Karl Pearson's correlation coefficient and regression coefficients. State the relation between correlation coefficient and regression coefficients. If sign of one regression coefficient is known, how will you decide the sign of correlation coefficient and other regression coefficient? 07**

Define Karl Pearson's correlation coefficient and regression coefficients. State the relation between correlation coefficient and regression coefficients. If sign of one regression coefficient is known, how will you decide the sign of correlation coefficient and other regression coefficient?

- B)** Following data gives price and demand of a commodity in 10 days. **07**

Price	2	5	4	8	10	9	5	6	7	4
Demand	8	6	7	3	2	4	5	3	2	10

Find the Karl Pearson's coefficient of correlation between price and demand and interpret the result.

- Q.5 A)** Define probability mass function of random variable X. A discrete random variable X has the following probability distribution. **07**

X	-2	-1	0	1	2	3
P(X=x)	0.1	k	0.2	2k	0.3	3k

- 1) Find the value of k.
- 2) Evaluate  $P(X \geq 2)$  and  $P(-2 < X < 2)$ .

- B)** Define binomial distribution with parameters n and p. If X is a binomial variate with  $n=5$  and  $p=0.3$ , Find 1)  $P(X=3)$   
2)  $P(X<3)$  **07**

- Q.6 A)** Define exponential distribution with parameter  $\lambda$ . Suppose lifetime of automobile batteries is exponentially distributed with mean 1000 days. What is the probability that such a battery will last more than 1200 days? **07**

- B)** Describe the sign test for testing that the population median is  $M_0$  against the alternative that the median is  $M_1 > M_0$  **07**

- Q.7 A)** Describe a large sample test procedure for testing the proportion P in the population has specified value  $P_0$ . In a hospital, 138 female and 162 male babies were born in a week. At 5% level of significance, does these figures confirm to the hypothesis that male and female babies born in equal proportion? **07**

- B)** Following data shows the performance of two batsmen A and B. **07**

	Batsman A	Batsman B
Number of innings	50	40
Mean runs	55	50
Standard deviation	8	10

Which batsman is more consistent in score? Which batsman is better in scoring the runs?

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**M.Sc. (Semester – II) (New) (CBCS) Examination, 2017**  
**GEOINFORMATICS**  
**CLIMATOLOGY (OET)**

Day & Date: Friday, 28-04-2017

Max. Marks: 70

Time: 10.30 AM to 01.00 PM

- N.B. :** 1) Attempt in **all five** questions.  
 2) Q.1 is **compulsory**.  
 3) Attempt any **two** from Q. No. 2, 3 and 4.  
 4) Attempt any **two** from Q. No. 5, 6 and 7.  
 5) All question carry **equal** marks.

**Q.1 Select the answer among the following:**

**14**

- 1) Average weather conditions in given place over longer period of time are called \_\_\_\_\_.  
 a) Season                      b) Atmosphere                      c) Weather                      d) Climate
- 2) Tertiary circulation of atmospheric wind system includes \_\_\_\_\_.  
 a) Local Winds                      b) Trade winds  
 c) Polar Easterlies                      d) Cyclones
- 3) In southeast Asia, North-easterly winds are known as \_\_\_\_\_.  
 a) Winter Monsoon                      b) Summer Monsoon  
 c) Both (A) and (B)                      d) None of this
- 4) The circulation of water from one part of the general earth system to another is known as \_\_\_\_\_.  
 a) Bio-Geochemical Cycle                      b) Hydrogen Cycle  
 c) Hydrological Cycle                      d) All the above
- 5) The weight of the water vapour per volume of air is called as \_\_\_\_\_.  
 a) Absolute Humidity                      b) Specific Humidity  
 c) Relative Humidity                      d) Mixing Ratio
- 6) The weight of water vapour per unit weight of dry air and not the moist air is called as \_\_\_\_\_.  
 a) Absolute Humidity                      b) Specific Humidity  
 c) Relative Humidity                      d) Mixing Ratio
- 7) \_\_\_\_\_ is the process of water vapour changing to the liquid state.  
 a) Evaporation                      b) Condensation  
 c) Precipitation                      d) All the above
- 8) The precipitation of liquid water particles, either in the form of drops of more than 0.5 mm diameter is called as \_\_\_\_\_.  
 a) Rain                      b) Drizzel                      c) Snow                      d) All the above







- 9) Stream flow or discharges means:
- It is quality of water flowing in the stream or channel
  - Quality, quantity and timing of water yields are mostly affected by man
  - Both (a) and (b)
  - None of these
- 10) \_\_\_\_\_ is the total length of all the streams and rivers in a drainage basin divided by the total area of the drainage basin
- Bifercation ration
  - Drainage density
  - Stream frequency
  - Drainage intensity
- 11) Watershed management is:
- The management of watershed area to achieve certain objectives of management
  - The objective can be conservation of soil and water, regulation of stream flow regime, flood control, reduction of sediment, ground water recharge etc.
  - Both (a) and (b)
  - None of these
- 12) If the same crop is repeatedly grown in a field:
- Nitrogen starvation many result
  - Specific mineral deficiency may arise
  - Soil will become prone to diseases
  - Water level in soil will recede
- 13) If the amount of discharge in an aquifer exceeds the amount of recharge, the groundwater table \_\_\_\_\_.
- will rise
  - will drop
  - will remain the same
  - may rise or drop depending on the porosity
- 14) \_\_\_\_\_ factor will not affect the runoff
- Shape of the watershed
  - Rainfall intensity
  - wind direction
  - topography

- Q.2** What is Watershed? Describe the watershed development plans **14**
- Q.3** Discuss soil erosion. Explain the factors which affect the soil erosion? **14**
- Q.4** Write a note on soil and water conservation measures. **14**
- Q.5** **Write short notes on:** **14**
- Objectives of watershed management
  - Design of simple bund structure
- Q.6** **Explain in short** **14**
- Land capability classification
  - factors affecting runoff
- Q.7** **Write note on** **14**
- Rainfall pattern in India
  - USLE

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**M.Sc.(Semester – II) (New) (CBCS) Examination, 2017**  
**COMPUTER SCIENCE**  
**OFFICE AUTOMATION (OET)**

Day & Date: Friday, 28-04-2017

Max. Marks: 70

Time: 10.30 AM to 01.00 PM

- N.B. :** 1) Q no. 1 & Q. no. 2 are compulsory.  
2) Attempt any three questions from Q. no. 3 to Q. no. 7  
3) Figures to the right indicate full marks.

**Q.1 A) Choose the correct Answer: 10**

- 1) With which of the following all formulas in excel starts?  
a) /                      b) \*                      c) \$                      d) =
- 2) What term describes explanatory text attached to a cell?  
a) Context              b) Callout              c) Comment              d) Dialog
- 3) Which of these will not select all the cells in a document?  
a) Using the Edit – select All menu  
b) Pressing Ctrl + A on the keyboard  
c) Clicking three times with the right mouse button in the spreadsheet  
d) None of these
- 4) What is the smallest and largest font size available in Font Size tool on formatting toolbar?  
a) 8 and 72                                      b) 8 and 68  
c) 6 and 72                                      d) 6 and 68
- 5) MS-WORD automatically moves the text to the next line when it reaches the right edge of the screen and is called?  
a) Carriage Return                              b) Enter  
c) Word wrap                                      d) None of these
- 6) Where can you find the horizontal split bar on MS Word screen?  
a) On the left of horizontal scroll bar  
b) On the right of horizontal scroll bar  
c) On the top of vertical scroll bar  
d) On the bottom of vertical scroll bar
- 7) Which of the following helps to reduce spelling error in the document?  
a) Auto Format                                      b) Auto Correct  
c) Smart Tags                                      d) AutoText

- 8) Where can you find the Master view on MS-Power point screen?  
 a) View      b) Animation      c) Design      d) Layout
- 9) Which among following first generation of computers had?  
 a) Micro processor  
 b) Vacuum Tubes and Magnetic Drum  
 c) IC chips  
 d) All of above
- 10) If the displayed system time and data is wrong, you can reset it using  
 a) Control panel      b) MS Word  
 c) Toolbar      d) Desktop panel

**B) Fill in the blanks. 04**

- 1) \_\_\_\_\_ shortcut key for add new slide below current slide in MS-Power point.  
 2) MS Access is \_\_\_\_\_ Software.  
 3) Start / Restart the computer is called \_\_\_\_\_  
 4) \_\_\_\_\_ shortcuts key for find and replace the query text from text document.

**Q.2 A) Attempt the following. 08**

- 1) Explain the importance and use of My Documents.  
 2) How to use Formula Auditing in MS-Excel? Explain with example.

**B) Write a short note on : 06**

- 1) Print Preview  
 2) Recycle Bin

**Q.3 A) What is desktop icon? Explain three icon with their function. 07**

**B) What is Computer? Explain its characteristics. 07**

**Q.4 A) What is the use of mail merge? Explain detail process of mail merge. 07**

**B) What is the use of table in MS word? Explain the process of adding formula in table. 07**

**Q.5 A) What is MS excel? Explain its application. 07**

**B) Describe pivot table in MS excel with a suitable example. 07**

**Q.6 A) What are different method of setting presentation style in MS Power Point? briefly explain any two method. 07**

**B) What is a MS power point? Describe use of MS power point in education with an example. 07**

**Q.7 A) Describe the detail process of importing and exporting data from other databases in MS Access. 07**

**B) Describe the "form" in MS access and any two operations with a suitable example. 07**

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**M.Sc. (Semester – II) (New) (CBCS) Examination, 2017**  
**COMPUTER SCIENCE**  
**LINUX OPERATING SYSTEM (OET)**

Day & Date: Friday, 28-04-2017

Max. Marks: 70

Time: 10.30 AM to 01.00 PM

**N.B. :** 1) Q no. 1 & Q. no. 2 are compulsory.

2) Attempt any three questions from Q. no. 3 to Q. no. 7

3) Figures to the right indicate full marks.

**Q.1 A) Choose the correct Answer: 10**

- 1) Which of the following command is use to see the services running in NFS server.  
a) rpcinfo    b) serverinfo    c) NFSinfo    d) All of above
- 2) Which command is used to sort the lines of data in a file in a reverse order?  
a) st                      b) sort-r                      c) sh                      d) sort
- 3) Which command reduces the size of a file?  
a) pzip                      b) gcatc                      c) pgcat                      d) gzip
- 4) The head command writes the first \_\_\_\_\_ lines of a file to screen.  
a) Five                      b) Twenty                      c) Ten                      d) Fifteen
- 5) Effective user id can be set using following permission.  
a) 0777                      b) 2666                      c) 4744                      d) None of above
- 6) How many links are created when we create a directory file?  
a) 1                      b) 2                      c) 3                      d) 4
- 7) Which command is used to change permission of files and directory?  
a) mv                      b) chgrp                      c) chmod                      d) set
- 8) In the shell by default, all variables are considered stored as.  
a) String                      b) Integer                      c) Charcter                      d) Float
- 9) Which command is used to close the vi editor?  
a) q                      b) wq                      c) both a & b                      d) all of above
- 10) Which of the following below are true functionalities of shell?  
a) Authenticates user                      b) Interprets command  
c) Only a and b                      d) All of above

- B) State whether true or false. 04**
- 1) Grep command is used to count number of character in a file.
  - 2) In kernel signals are used to notify a process of certain faults.
  - 3) Linux is an open source operating system and the source code is shared.
  - 4) pwd command displays password file content.
- Q.2 A) Write short note on following. 08**
- 1) Samba.
  - 2) Vi-editor
- B) Answer the following. 06**
- 1) Discuss the importance of kernel in Linux system.
  - 2) Explain the advantages of Linux operating system.
- Q.3 Answer the following.**
- A) How can you run x-client on a remote machine? 07**
- B) Explain the file system of Linux operating system. 07**
- Q.4 Answer the following.**
- A) List the various permission used for files and directories? Explain in detail. 07**
- B) What is DHCP? Explain with an example.**
- Q.5 Answer the following.**
- A) Explain how packages are installed and removed in Linux. 07**
- B) Write steps involved in booting of Linux loader. 07**
- Q.6 Answer the following.**
- A) What is the purpose of Shell? Explain different types of shell. 07**
- B) Discuss the communication facilities in Linux operating system. 07**
- Q.7 Answer the following.**
- A) State and explain the concept of DNS for Linux system. 07**
- B) Explain in detail about common Unix printing system. 07**

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**M.Sc. (Semester – II) (New) (CBCS) Examination, 2017**  
**ZOOLOGY**  
**COMPUTATIONAL BIOLOGY (OET)**

Day & Date: Friday, 28-04-2017

Max. Marks: 70

Time: 10.30 AM to 01.00 PM

Instructions: : 1) **Q.1, 2, 3** are compulsory.  
 2) Answer **any two** from Q.3, 4 & 5.

**Q.1 A) Multiple choice questions (per question 2 marks) 14**

- 1) \_\_\_\_\_ is defined as the value of the middle observations when arranged in order of their magnitude.  
 a) Median                      b) Mean                      c) Mode                      d) Variance
- 2) If we divide the distribution into 100 equal parts, the points of division are called \_\_\_\_\_.  
 a) Quartile                      b) Percentile                      c) Decile                      d) Pentile
- 3) The diagrams obtained by taking classes on X axis and corresponding frequencies along Y axis is called \_\_\_\_\_.  
 a) Polygon    b) Histogram  
 c) Frequency curve    d) Ogive curve
- 4) Coefficient of correlation lies within \_\_\_\_\_.  
 a) -1 to +1                      b) 0 to 1                      c) -1 to 0                      d) 0.1 to 1.0
- 5) Hb% of an animal was recorded as 6,7,4,5,5,3,4 grams/100ml. then the median Hb% is \_\_\_\_\_.  
 a) 4gms/100ml    b) 5gms/100ml  
 c) 6gms/100ml    d) 7gms/100ml
- 6) The table giving the frequencies for different class interval is known as  
 a) Mean      b) Frequency table                      c) Median                      d) Bivariate table
- 7) Arithmetic mean of 12,16,18,20,18,16,14,12  
 a) 15.75                      b) 16.50                      c) 14.5                      d) 16.75

**Q.2 Long answer type question (compulsory): 14**  
 Describe Measures of central tendency with formulas

- Q.3 Answer the following:**
- A) coefficient of variation 07**  
**B) Student t-test 07**



- Q.4 Explain the following:**
- A) Chi-square test **05**
  - B) Probability **05**
  - C) Rank correlation **04**
- Q.5 Explain in short:**
- A) ANOVA **07**
  - B) Null Hypothesis **07**
- Q.6 Write short notes on any four of the following:** **14**
- A) Normal Distribution
  - B) Scatter diagram
  - C) Range
  - D) Standard Deviation
  - E) Quartile deviation
  - F) Regression

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**M.Sc. (Semester – II) (CBCS) (New) Examination, 2017**

**ZOOLOGY**

**RESEARCH METHODOLOGY AND 4 INTELLECTUAL PROPERTY RIGHT (OET)**

Day & Date: Friday, 28-04-2017

Max. Marks: 70

Time: 10.30 AM to 01.00 PM

- N.B. :** 1) Q no. 1 & Q. no.2, 6 are compulsory.  
2) Attempt any two questions from Q. no. 3, 4 and 5.

**Q.1 A) Choose the correct Answer: 14**

- 1) In case of ANOVA, what is SSW?
  - a) The variance caused by the treatments.
  - b) The variance caused by the difference within the subjects
  - c) Total variance caused by the extraneous factors
  - d) Total variance between the groups.
  
- 2) What are the functions of statistical analysis?
  - a) Explanation of results
  - b) Presentation of data
  - c) Both of them
  - d) None of these
  
- 3) The case study is the study of a
  - a) Single group
  - b) Single individual
  - c) Single community or family
  - d) Single unit done intensively to bring out the processes and dynamics underlying its problems and functioning.
  
- 4) When the questions are presented to the respondents in a face-to-face situation, and the interviewer rather than the subjects, fills out the query, it is called
  - a) An Inventory
  - b) A Questionnaire
  - c) A Schedule
  - d) A Test
  
- 5) What is the meaning of Null Hypothesis?
  - a) Difference between two parametric mean is zero
  - b) The difference is due error in sampling
  - c) Both of them
  - d) None of these
  
- 6) Which of types of correlation are used in educational research?
  - a) Co-efficient correlation
  - b) Partial correlation
  - c) Multiple cumulative correlations
  - d) All of these

- 7) What does randomization ensure in experimental research?
- a) Uniformity of the groups
  - b) Similarity of the groups.
  - c) Uniformity and similarity of the groups.
  - d) Uniformity, similarity and equalization of the groups.

- Q.2** Describe in detail the structure and components of thesis. **14**
- Q.3** **Answer the following.**
- A)** Give an account on collection of samples. **07**
  - B)** Funding agencies. **07**
- Q.4** **Explain the following.**
- A)** Uses of SPSS. **05**
  - B)** Impact factors and its importance. **05**
  - C)** Tests of significance. **04**
- Q.5** **Explain in short:**
- A)** Any two search engines, with their application. **07**
  - B)** Give an account on materials and methods. **07**
- Q.6** **Write short notes (any four):** **14**
- A)** Science citation index
  - B)** Note on collection of Literature
  - C)** Intellectual Property Right
  - D)** Use of Inflation in research work.
  - E)** Copyright
  - F)** ISSN



- B) Answer the following terms. 07**
- 1) What is mutation breeding?
  - 2) Define mass selection.
  - 3) What is heterosis?
  - 4) What is edible vaccine?
  - 5) What is cryopreservation?
  - 6) What is bulk method?
  - 7) Law of homologous variation.

**Section – II**

- Q.2** Describe the breeding methods in self pollinated crops. Add note on its merits and demerits. **14**
- Q.3** Give an account on cryopreservation. **14**
- Q.4** Describe use of somaclonal and gametoclonal variation for crop improvement. **14**
- Q.5 Answer any two of the following: 14**
- 1) Describe role of molecular marker in stress resistance breeding.
  - 2) Give an account on artificial seeds.
  - 3) Describe meristem culture.
- Q.6 Answer any TWO of the following 14**
- 1) Describe in details protoplast culture and fusion.
  - 2) Give an account on Preservation of plant germ plasmin-vitro.
  - 3) Describe GM crops for nutritional quality and quantity.

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**M.Sc. (Semester – II) (New) (CBCS) Examination, 2017  
GENETICS**

**COMPUTATIONAL STRUCTURE BIOLOGY AND DRUG DESIGNING (OET)**

Day & Date: Friday, 28-04-2017

Max. Marks: 70

Time: 10.30 AM to 01.00 PM

- N.B. :** 1) **Part-I**, Question 1 is **compulsory**.  
 2) Attempt **any four** questions from Part II.  
 3) Figures to the **right** indicate full **marks**.  
 4) Answer to the Part-I and Part-II are to be written in same answer Booklet only.

**Part-I**

**Q.1 A) Rewrite the sentence after choosing the correct answer from the given alternatives** **07**

- 1) Homology modeling is also called as \_\_\_\_\_ modeling.  
 a) Comparative    b) Secondary    c) Primary    d) Domain
- 2) Proteomics is the study of \_\_\_\_\_.  
 a) Set of proteins in a specific region of the cell    b) Set of proteins  
 c) Entire set of expressed proteins in a cell    d) None of these
- 3) Model can be evaluating by \_\_\_\_\_.  
 a) Procheck    b) ANOLEA    c) WHAT IF    d) All of these
- 4) Protein-Protein interaction prediction database are \_\_\_\_\_.  
 a) DIP    b) MINT    c) STRING    d) All of these
- 5) \_\_\_\_\_ is the method used to design the drug using the knowledge of 3D structure of protein.  
 a) Ligand based drug design    b) Structure based drug design  
 c) Both a and b    d) None of these
- 6) \_\_\_\_\_ is visualization tool which does not recognize PDB format.  
 a) Cn3D    b) RasMol    c) RasTop    d) PyMol
- 7) Molecular chemical structures can be designed using \_\_\_\_\_ tools.  
 a) ACD Lab    b) Chem sketch  
 c) KEGG draw    d) All of the above

**B) Definitions:**

**07**

- 1) Prodrug
- 2) RCSB PDB
- 3) CYP450
- 4) SCOP
- 5) HTS
- 6) Domain
- 7) Lectin

## Part – II

**Answer any four of the following:**

- Q.2** What is yeast two hybrid system? Explain the mechanism of yeast two hybrid system for predicting Protein-Protein interaction. **14**
- Q.3** Explain the Homology modeling with its step in details and Give a detail account on different programmers for the homology modeling. **14**
- Q.4** Explain the 3D structure prediction and explain fold recognition and threading method in details. **14**
- Q.5** **Answer any two of the following** **14**
- a) Write a note on combinatorial chemistry.
  - b) What is structural bioinformatics? Explain the RCSB PDB and mmCIF file format in details.
  - c) Explain in detail the different phases of clinical trials.
- Q.6** **Write short notes on (any two):** **14**
- a) CATH and SCOP
  - b) Drug Bank
  - c) Protein-carbohydrate interaction

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**M.Sc. (Semester – II) (New) (CBCS) Examination, 2017**  
**BIOTECHNOLOGY**  
**IMMUNOLOGY AND IMMUNO TECHNIQUES (OET)**

Day & Date: Friday, 28-04-2017

Max. Marks: 70

Time: 10.30 AM to 01.00 PM

- N.B. :** 1) All question of **Section I** are **compulsory**.  
 2) Answer **any four** questions from **Section II**.

**Section I**

**Q.1 A) Choose the correct alternative and rewrite the sentences: 07**

- 1) Blood borne antigens are mainly trapped in \_\_\_\_\_.  
 a) Spleen      b) Lymphnode      c) Bone marrow      d) Thymus
- 2) Rhodamine B is used in \_\_\_\_\_ test.  
 a) Radioimmunoassay      b) Immune-fluorescence  
 c) ELISA      d) Complement fixation
- 3) Passive immunization is done by using \_\_\_\_\_.  
 a) Vaccines      b) Toxoids      c) Immune sera      d) Toxins
- 4) \_\_\_\_\_ antibody is called as regain antibody.  
 a) IgG      b) IgM      c) IgA      d) IgE
- 5) \_\_\_\_\_ is secondary lymphoid organ.  
 a) Spleen      b) Lymphnode      c) Peyer's patch      d) All of these
- 6) The smallest unit of antigenicity is \_\_\_\_\_.  
 a) Epitope      b) Adjuvant      c) Hapten      d) Antibody
- 7) The first step in the alternate complement activation pathway is \_\_\_\_\_.  
 a) Binding of C1 to antigen-antibody  
 b) Binding of C3b to an activator  
 c) Binding of C2 to an activator  
 d) Binding of antigen to C1

**B) Define the following terms: 07**

- 1) Isograft and allograft
- 2) Properties of cytokines
- 3) Enlist chemical barriers of innate immunity
- 4) ELISA
- 5) Difference between immediate and delayed type of hypersensitivity
- 6) Give any two organ specific autoimmune diseases
- 7) Presentation of nonpeptide antigens



## Section – II

**Answer any four of the following:**

- Q.2** Give structural, morphological, cultural, life cycle and pathogenicity characters, Lab diagnosis, prophylaxis of HIV virus. **14**
- Q.3** Explain mechanism of processing and presentation of exogenous antigen. **14**
- Q.4** Write an essay on principle of antigen and antibody interaction. **14**
- Q.5** **Answer any two of the following:** **14**
- a) Explain structure of MHC class I molecule.
  - b) Explain factors affecting antigenicity.
  - c) Mechanism of allograft recognition.
- Q.6** **Answer any TWO of the following:** **14**
- a) Traditional vaccines
  - b) Alternate complement pathway
  - c) Cellular defense mechanisms



## Section II

**Answer any four of the following:**

- Q.2** Write on : Mineral deficiencies and their symptoms. **14**
- Q.3** Explain: Chemical, physical and microbiological properties of soil. **14**
- Q.4** Write in detail account of Biofertilizers. **14**
- Q.5** **Answer two from the following:** **14**
- a) Write a note on poultries farming.
  - b) Explain Physiological and molecular response of plants to temperature stress.
  - c) Explain importance of hormone Cytokinin.
- Q.6** **Write short notes on (any two):** **14**
- a) Add a note on: Importance of livestock in agriculture.
  - b) Describe process of Seed certification.
  - c) Explain Fruit ripening process and its control.

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**M.Sc. (Semester – II) (New) (CBCS) Examination, 2017**  
**BIOINFORMATICS**  
**PROGRAMMING IN OBJECT ORIENTED LANGUAGES (OET)**

Day & Date: Friday, 28-04-2017

Max. Marks: 70

Time: 10.30 AM to 01.00 PM

- Instructions: : 1) **Part I, Question 1 is compulsory.**  
 2) Attempt **any four** questions from **part II.**  
 3) **Figures to the right indicate full marks.**  
 4) Answer to the **Part-I and Part II** are to be written in **same answer Booklet only.**

**Part – I**

**Q.1 A) Rewrite the sentences after choosing the correct answer from the given alternatives. 07**

- 1) \_\_\_\_\_ cannot be used for a variable name in Java
  - a) Identifier
  - b) Keyword
  - c) Identifier & keyword
  - d) None of the mentioned
- 2) \_\_\_\_\_ is the range of data type short in Java
  - a) -128 to 127
  - b) -32768 to 32767
  - c) -2147483648 to 2147483647
  - d) None of the mentioned
- 3) \_\_\_\_\_ loops will execute the body of loop even when condition controlling the loop is initially false
  - a) do-while
  - b) while
  - c) for
  - d) None of the mentioned
- 4) Class used to make a thread is \_\_\_\_\_
  - a) String
  - b) System
  - c) Thread
  - d) Runnable
- 5) \_\_\_\_\_ function is called to display the output of an applet.
  - a) display()
  - b) print()
  - c) displayApplet()
  - d) PrintApplet()
- 6) \_\_\_\_\_ keyword is used to make a class
  - a) class
  - b) struct
  - c) int
  - d) None of the mentioned
- 7) Perl stands for \_\_\_\_\_.
  - a) Practical extraction report language
  - b) Preparation extraction report language
  - c) Practical extraction review language
  - d) None of these

**B) Definition:**

**07**

- 1) Constant in java
- 2) Vectors
- 3) Looping
- 4) Thread
- 5) Applet
- 6) Class
- 7) Perl

**Part – II**

**Answer any four of the following:**

- Q.2** What is Looping & types of looping in java with suitable example. **14**
- Q.3** Explain the interface and constants in java with examples. **14**
- Q.4** Explain array & list data in Perl with example. **14**
- Q.5** **Answer any two of the following:** **14**
- 1) Design a simple login page using applet in java.
  - 2) Write a Perl script to display three letter & one letter amino acid code.
  - 3) Explain exception handling in java.
- Q.6** **Write short notes on (any two):** **14**
- 1) Thread methods
  - 2) Java features
  - 3) Perl in bioinformatics

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**M.Sc. (Semester – II) (New) (CBCS) Examination, 2017**  
**BIOINFORMATICS**  
**CANCER GENETICS AND STEM CELL RESEARCH (OET)**

Day & Date: Friday, 28-04-2017

Max. Marks: 70

Time: 10.30 AM to 01.00 PM

- Instructions: :
- 1) **Section I** is compulsory.
  - 2) From **Section II** attempt any four
  - 3) **All** questions carry **equal** marks.
  - 4) **Figures** to the right **indicate** full marks.
  - 5) **Draw** neat and labeled **diagrams**

**Section – I**

**Q.1 A) Rewrite the following sentences by using correct alternatives** **07**

- 1) Totipotancy is the ability of \_\_\_\_\_ stem cells.
  - a) Mesenchymal
  - b) Hematopoietic
  - c) Adult stem cell
  - d) Embryonic
- 2) Hematopoietic steam cells are \_\_\_\_\_ cell.
  - a) Unipotent
  - b) Totipotent
  - c) Pluripotent
  - d) Embryonic
- 3) Regulation of epithelial and mesenchymal interactions is carried out by \_\_\_\_\_.
  - a) Platelet Derived Growth Factor-
  - b) Goblet growth factor
  - c) Zymogenic factor
  - d) Tumor Necrotic factor
- 4) The ability to invade surrounding tissue and \_\_\_\_\_ is main hallmark of cancer
  - a) Regeneration
  - b) Replication
  - c) Metastasis
  - d) Motility
- 5) \_\_\_\_\_ is inhibitory protein of p53
  - a) p27
  - b) Mdm2
  - c) p21
  - d) X-rays
- 6) \_\_\_\_\_ proteins act like a spool that DNA can be wound around to become more compact.
  - a) Histone
  - b) Nuclease
  - c) Protease
  - d) Helicase
- 7) The proteases system involved in apoptosis pathway is called as \_\_\_\_\_.
  - a) Caspases
  - b) CD molecules
  - c) p53
  - d) TGF-B

**B) Definitions:**

**07**

- 1) Epigenetics
- 2) Oncogene
- 3) Embryonic stem cell
- 4) Benign tumor
- 5) Hematopoietic Stem Cells
- 6) Carcinogenes
- 7) Extra Cellular Matrices

**Section II**

**Answer any four of the following:**

- Q.2** Discuss in detail Tumor suppressor gene. **14**
- Q.3** Explain in detail isolation of stem cells from tissue. **14**
- Q.4** Explain in detail event of angiogenesis. **14**
- Q.5** **Answer any two of the following:** **14**
- 1) Write on Mesenchymal Stem Cells
  - 2) Give details mechanism of Metastatic cascade
  - 3) Discuss Radiation Therapy
- Q.6** **Answer any two of the following:** **14**
- 1) Write a short note on Transplantation Technique.
  - 2) Explain Epigenetics in cancer
  - 3) Add a note on physical carcinogens.

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**M.Sc. (Semester – II) (CBCS) (NEW) Examination, 2017**  
**ELECTRONICS**  
**SIGNALS AND SYSTEMS (OET)**

Day &amp; Date: Friday, 28-04-2017

Max. Marks: 70

Time: 10.30 AM to 01.00 PM

- N.B. :** 1) Q no. 1 & Q. no. 2 are compulsory.  
 2) Attempt any three questions from Q. no. 3 to 7  
 3) Attempt five questions.

**Q.1 A) Choose the correct Answer: 08**

- 1) The periodic signals satisfying the conditions \_\_\_\_\_, then it is said to have half wave symmetry.
  - a)  $x(t) = x(t + T / 2)$
  - b)  $x(t) = x(t - T / 2)$
  - c)  $x(t) = -x(t \pm T / 2)$
  - d)  $x(n) = x(n + N / 2)$
- 2)  $X(n) = a^{|n|}$ ,  $|a| < 1$  is
  - a) An energy signal
  - b) Neither an energy signal nor a power signal
  - c) A power signal
  - d) An energy as well as a power signal
- 3) If  $x(t)$  is odd, then its fourier series coefficients must be \_\_\_\_
  - a) Real and even
  - b) Real and odd
  - c) Imaginary and odd
  - d) Imaginary and even
- 4) To obtain  $x(4-2n)$  From the given signal  $x(n)$ , the following precedence rule is used for operations on the independent variable  $n$ :
  - a) Time scaling  $\rightarrow$  Time shifting  $\rightarrow$  Refection
  - b) Reflection  $\rightarrow$  Time scaling  $\rightarrow$  Time shifting
  - c) Time scaling  $\rightarrow$  Reflection  $\rightarrow$  Time shifting
  - d) Time shifting  $\rightarrow$  Time scaling  $\rightarrow$  Reflection
- 5) In the fourier series coefficients of a signal are periodic then the signal must be
  - a) continuous time, periodic
  - b) discrete time, periodic
  - c) continuous time, non-periodic
  - d) discrete time, non-periodic
- 6) The fourier series coefficient of the shifted signal  $x(t-t_0)$  are
  - a)  $\overline{e^{-jn\omega t} c_n}$
  - b)  $e^{jn\omega t} c_n$
  - c)  $e^{\omega t} c_n$
  - d)  $e^{-\omega t} c_n$
- 7) Which of the following is purely even signal?
  - a)  $X(t)=e^{at}$
  - b)  $X(t)=A\cos\omega_0 t$
  - c)  $X(t)=e^{j\omega_0 t}$
  - d)  $X(t)=u(t)$



8) In MATLAB \_\_\_\_\_ sign is for the assignment operator.

- a) =                      b) %                      c) ==                      d) ~

**B) State true or false: 06**

- 1) On multiplying a non-casual signal by unit step function then it became casual.
- 2) For energy signal the power is Zero.
- 3) The amplitude of anti-symmetric signal is always one at origin.
- 4) The system that require memory are called static system.
- 5) Mathematically unit step function is derivative of unit impulse function.
- 6) A LTI system is casual if impulse response is equal to zero.

**Q.2 A) Attempt any two: 10**

- 1) Define a system. How the systems are classified?
- 2) Write a note on different types of file used in Matlab.
- 3) Check whether the following system are time variant or not  
i)  $y(n) = x(n) + nx(n-1)$     ii)  $y(n) = x^2(n-1) + a$

**B) Write a Matlab program to plot a continuous time cosine signal and its sampled version. 04**

**Q.3 A) Obtain the fourier components of the periodic square wave which is symmetrical with respect to the 08**

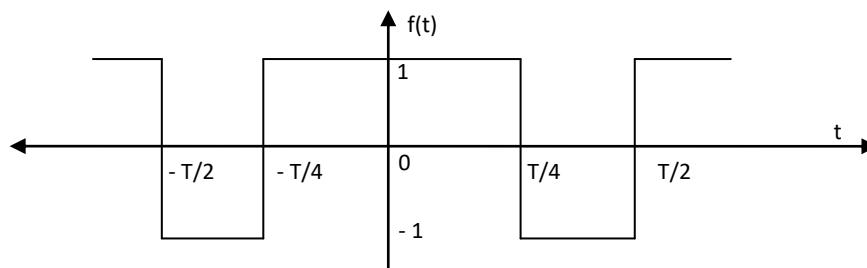


Figure 1

vertical axis at time  $t=0$ , as shown in figure 1

**B) With regard to fourier series representation, justify the following statement 06**

- 1) Odd functions have only sine terms.
- 2) Even functions have no sine terms.
- 3) Functions with half-wave symmetry have only odd harmonics.

**Q.4 A) Obtain liner convolution of following sequence using graphical method  $x(n) = \{1, 2, 1, 2\}$  and  $h(n) = \{1, 1, 1\}$  08**

**B) Prove that LTI system is completely characterized by unit impulse function. 06**

**Q.5 A) A discrete signal  $x(n)$  is defined as 08**

$$\begin{aligned} x(n) &= (1+n/3) & \text{for } -3 \leq n \leq -1 \\ &= 1 & \text{for } 0 \leq n \leq 3 \\ &= 0 & \text{elsewhere} \end{aligned}$$

- 1) Determine its value and sketch the signal  $x(n)$ .
- 2) Sketch the signal that result if we
  - i) 1<sup>st</sup> fold  $x(n)$  then the delay the resulting sequence by 4 samples.
  - ii) 1<sup>st</sup> delay  $x(n)$  by 4 sample then fold the resulting signal.
- 3) Express the sequence  $x(n)$  in terms of sequence  $\delta(n)$  and  $u(n)$ .

**B)** Determine impulse response of the DT-LTI system in terms of unit impulse input  $\delta(n)$  for  $h(n)=2^{-n} u(n) - 2^{-n} u(n-3)$  **06**

**Q.6 A)** State and prove parsevals theorem for complex exponential fourier series. **08**

**B)** Determine whether the following system is liner or not **06**

$$y(n) = \frac{1}{3} [x(n) + x(n - 1) + x(n - 2)]$$

**Q.7 A)** Obtain the trigonometric fourier series for the half-wave rectified sine wave shown in figure 2. **08**

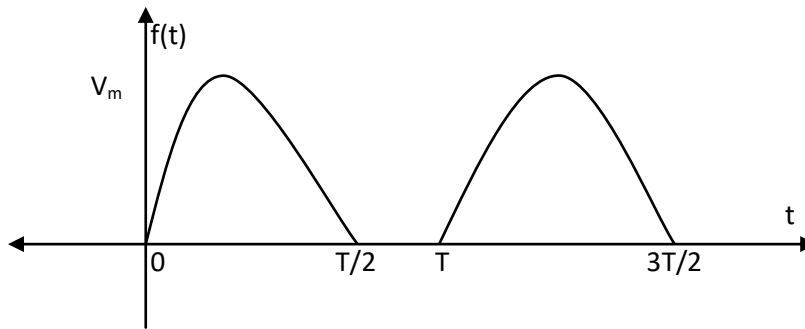


Figure 2

**B)** Sketch the continuous time signal  $x(t)=2\sin\pi t$  for n interval  $0 \leq t \leq 2$  sample the continuous time signal with sampling period  $T=0.2$  sec and sketch the s=discrete time signal. **06**

Seat No.	
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**M.Sc. (Semester – II) (New) (CBCS) Examination, 2017  
BOTANY**

**ADVANCES IN PLANT PATHOLOGY (OET)**

Day & Date: Friday, 28-04-2017

Max. Marks: 70

Time: 10.30 AM to 01.00 PM

- N.B. :** 1) Attempt in **all five** questions.  
 2) Q.1 is **compulsory**.  
 3) Attempt any **two** from Q. No. 2, 3 and 4.  
 4) Attempt any **two** from Q. No. 5, 6 and 7.  
 5) Figures to the **right** indicate **full** marks.

**Q.1 Choose the correct answer from the given alternatives.**

**14**

- 1) In \_\_\_\_\_ Julius Kuhn in Germany had defined plant disease.  
 a) 1858                      b) 1857                      c) 1868                      d) 1859
- 2) Club root of crucifer was first described by \_\_\_\_\_ in 1877.  
 a) Moronin                      b) Woronin                      c) Boronin                      d) Goronin
- 3) White rust is the example of \_\_\_\_\_ disease.  
 a) viral                      b) fungal                      c) bacterial                      d) mycoplasma
- 4) Powdery mildew of grapevines disease was reported from England in \_\_\_\_\_.  
 a) 1847                      b) 1846                      c) 1845                      d) 1844
- 5) Red rust is the example of \_\_\_\_\_ disease.  
 a) fungal                      b) viral                      c) algal                      d) bacterial
- 6) Singh et. al. in \_\_\_\_\_ tried to put up a moderately precise definition of disease.  
 a) 1989                      b) 1979                      c) 1969                      d) 1959
- 7) \_\_\_\_\_ in 1886 was the first to study critically the nature of direct penetration.  
 a) De Bary                      b) De Vary                      c) De Mary                      d) De Carry
- 8) \_\_\_\_\_ is the example of viral disease.  
 a) CMV                      b) BMV                      c) GMV                      d) DMV
- 9) Jones in \_\_\_\_\_ directed increased attention towards the relation of the environment for development of disease.  
 a) 1964                      b) 1974                      c) 1924                      d) 1934

- 10) Curl in \_\_\_\_\_ has reviewed the control of plant disease by crop rotation.  
 a) 1977                      b) 1987                      c) 1999                      d) 1963
- 11) Disease forecasting is the example of \_\_\_\_\_.  
 a) Epidemiology                      b) lepidemology  
 c) apidemology                      d) none of these
- 12) In 1845 the disease destroyed the potato crop in \_\_\_\_\_.  
 a) India                      b) West Indies                      c) Finland                      d) Ireland
- 13) The term disease made by Horsfall and Diamond in \_\_\_\_\_.  
 a) 1969                      b) 1959                      c) 1979                      d) 1989
- 14) The literature on the genetics of disease resistance in vegetables has been reviewed by \_\_\_\_\_ in 1965.  
 a) Walker                      b) Singh                      c) Nanir                      d) None of these
- Q.2** a) Describe the classification of plant diseases based on crops. **07**  
 b) What is rust? Explain the rust disease studied by you. **07**
- Q.3** a) Explain the methods of diagnosis of plant diseases. **07**  
 b) Give the symptoms, causal organism, disease cycle and control measures of little leaf of brinjal. **07**
- Q.4** a) Explain the protection methods of plant disease control. **07**  
 b) Describe the genetical and chemical defense mechanism studied by you **07**
- Q.5** a) Describe the symptoms, causal organism and control measures of circus canker. **05**  
 b) Explain the symptoms, casual oraganism and control measures of root knot of vegetables. **05**  
 c) Give the concept of plant disease. **04**
- Q.6** a) Describe the exclusion of plant disease control **05**  
 b) Explain the seed borne pathogen studied by you. **05**  
 c) Write note on post penetration. **04**
- Q.7** **Write notes on any three.** **14**  
 a) GSD  
 b) Importance of plant disease  
 c) Colonization  
 d) Eradication

Seat No.	
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**M.Sc. (Semester – II) (CBCS) (NEW) Examination, 2017**  
**AGROCHEMICALS AND PEST MANAGEMENT**  
**BIOTECHNOLOGICAL ASPECTS IN PLANT PROTECTION- I (OET)**

Day & Date: Friday, 28-04-2017

Max. Marks: 70

Time: 10.30 AM to 01.00 PM

- N.B. :** 1) **All questions are compulsory.**  
 2) Attempt **any two** questions from section – II and III.  
 3) Figure to **right** indicate **full marks.**  
 4) **All questions carry equal marks.**

**SECTION – I**

**Objective type:**

- N. B.:** I) Correct answer to each items carries one mark.  
 II) There are in all 14 items for 14 marks.

- 1) Botanical name of onion \_\_\_\_\_.  
 a) Brassica oleracea Linn. Var. capitata  
 b) Arachis hypogaea Linn  
 c) Allium cepa Linn  
 d) Triticum aestivum Linn
- 2) Sugarcane breeding institute is established at \_\_\_\_\_.  
 a) Coimbatore      b) Bangalore      c) Delhi      d) Indore
- 3) \_\_\_\_\_ is a serious disease of wheat.  
 a) Rust      b) Smut      c) Leaf blight      d) Foot root
- 4) Ground nut belong to the \_\_\_\_\_ family.  
 a) Acanthaceae      b) Caesalpiniaceae  
 c) Mimosaceae      d) Fabaceae
- 5) \_\_\_\_\_ is the Sorghum variety cultivation in Rabi season.  
 a) SPV-286      b) Shewta      c) Phule Yeshoda      d) None of these
- 6) The term horizontal resistance was first used by  
 a) J.E. Vanderplank      b) Raoul A Robinson  
 c) Gautheret      d) Laibach
- 7) \_\_\_\_\_ is group of plant produced from a single plant through asexual reproduction.  
 a) Clones      b) Plasmids      c) Vector      d) Enzymes
- 8) Root initiating hormone in tissue culture is \_\_\_\_\_.  
 a) Auxin      b) Gibberellins      c) Cytokinens      d) ethylene





- 7) A \_\_\_\_\_ is an analytical device, used for the detection of an analyte that combines a biological component with a physicochemical detector.
- a) Nanosensor
  - b) Nanolaser
  - c) Nanodevice
  - d) Biosensor

**B) Define the following terms:**

**07**

- 1) Nanobiochip
- 2) DNA nanomachines
- 3) Drug discovery
- 4) Nano electronics
- 5) Cantilever
- 6) Nanolasers
- 7) Microfluidic chips

**Part – II**

- Q.2** Write a short note on nanodiagnostics. Explain the role of nanoarrays in molecular diagnostics **14**
- Q.3** What are nanobarcodes? How are they used in SNP genotyping? **14**
- Q.4** Write a short note on nanobiotechnology and its role in drug discovery. **14**
- Q.5** Write a short note on nanomedicine. Explain in brief about nanoparticle drug system for oral administration.
- Q.6** **Write short notes on (any two):** **14**
- 1) Dendrimers
  - 2) Biodegradable polymers
  - 3) Gold nanoparticles for drug discovery
- Q.7** **Explain the following in detail (any two):** **14**
- 1) Pharmacokinetics of nanocarrier
  - 2) Nanoarray devices
  - 3) Q dot nanobarcode for multiplexed gene expression profiling.



Seat No.	
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**M.Sc. (Semester – II) (New) (CBCS) Examination, 2017**  
**NANOTECHNOLOGY**  
**GREEN MANUFACTURING TECHNOLOGY (OET)**

Day & Date: Friday, 28-04-2017

Max. Marks: 70

Time: 10.30 AM to 01.00 PM

- Instructions: : 1) *Part-I, Question 1 is compulsory.*  
 2) *Attempt any four questions from Part II*  
 3) *Figures to the right indicate full marks.*  
 4) *Answer to the Part –I and Part-II are to be written in same answer Booklet only*

**Part-I**

**Q.1 A) Rewrite the sentence after choosing the correct answer from the given alternatives 07**

- 1) The two main solvents for rubber are \_\_\_\_\_ and \_\_\_\_\_  
 a) Turpentine and Naphtha                      b) Toluene and Chloroform  
 c) Naphtha and Toluene                         d) Chloroform and Turpentine
  
- 2) Waste disposal of biodegradable plastics is either \_\_\_\_\_ or \_\_\_\_\_  
 a) Aerobic and Anaerobic                        b) Aerobic and Decomposition  
 c) Decomposition and Fermentation        d) Fermentation and Aerobic
  
- 3) Flexible \_\_\_\_\_ is the ability for a robot or system to be quickly and easily re-tasked to change product design for both low and high mix manufacturing.  
 a) Arm                      b) Renovation                      c) Automation                      d) Leg
  
- 4) \_\_\_\_\_ is the integrated management of all the activities required to move products through the supply chain.  
 a) Sustainable green manufacturing        b) Waste management  
 c) Industrial ecology                              d) Logistics
  
- 5) Plant protein \_\_\_\_\_ from maize is used to manufacture bioplastics.  
 a) Keratin                      b) Albumin                      c) Actin                      d) Zein
  
- 6) Rapid Prototyping employs \_\_\_\_\_ fabrication techniques to quickly manufacture parts.  
 a) Manual                      b) non digital                      c) Digital                      d) Physical
  
- 7) The container must be chemically \_\_\_\_\_ with the material it will hold.  
 a) Inert                      b) Incompatible                      c) Ignitable                      d) Reactive

**B) Define/ Explain:**

**07**

- 1) E-waste
- 2) Polyesters
- 3) Carbon footprint
- 4) Rapid prototyping
- 5) Incineration
- 6) Microfabrication
- 7) Pyrolysis

**Part – II**

**Answer any four of the following:**

- Q.2** What is green manufacturing? What are the different stages involved in it? **14**
- Q.3** Describe in detail different alternative energy resources. **14**
- Q.4** Need of energy management and its importance. **14**
- Q.5** What is product stewardship? Write a short note on codes developed by American Chemistry Council **14**
- Q.6 Write short note any two:** **14**
- a) Motivation provided by government for green manufacturing
  - b) Metrics for green manufacturing
  - c) Air emission management
- Q.7 Explain in detail about any two:** **14**
- a) Types of waste
  - b) Rubber
  - c) By-product synergy

Seat No.	
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**M.Sc. (Semester – II) (New) (CBCS) Examination, 2017**  
**MICROBIOLOGY**  
**BIOINFORMATICS & BIostatISTICS (OET)**

Day & Date: Friday, 28-04-2017

Max. Marks: 70

Time: 10.30 AM to 01.00 PM

- Instructions: :**
- 1) Part-I , Question 1 is compulsory
  - 2) Attempt any 4 questions from Part II
  - 3) Figures to the right indicates full marks
  - 4) Answer to the Part I and Part II are to be written in the same answer booklet only.

**Part I**

**Q.1 Rewrite the sentence by choosing correct alternatives from the following: 14**

- 1) Probability always lies between \_\_\_\_\_  
 a) 0 to 2                      b) -1 to 1                      c) 0 to 1                      d) 0 to infinity
- 2) Discrete variable takes \_\_\_\_\_  
 a) Particular values                      b) Values between range  
 c) Only negative values                      d) None of these
- 3) The result of statistical test, denoted p, shall be interpreted as follows  
 \_\_\_\_\_  
 a) the null hypothesis  $H_0$  is rejected if  $p < 0.05$   
 b) the null hypothesis is  $H_0$  is rejected if  $p > 0.05$   
 c) the alternate hypothesis  $H_1$  is rejected if  $p > 0.05$   
 d) the null hypothesis is  $H_0$  is accepted if  $p < 0.05$
- 4) \_\_\_\_\_ is least affected by extreme value  
 a) Median                      b) Mean                      c) Mode                      d) Variance
- 5) By using histogram we find \_\_\_\_\_  
 a) Mean                      b) Median                      c) Mode                      d) None of these
- 6) Hypothesis of no difference is called as \_\_\_\_\_  
 a) Null hypothesis                      b) Alternative hypothesis  
 c) Simple hypothesis                      d) Composite hypothesis
- 7) Mean of poisson distribution is \_\_\_\_\_  
 a)  $\Lambda$                       b)  $\lambda^2$                       c)  $\lambda^2 + \lambda$                       d)  $\lambda^3$
- 8) \_\_\_\_\_ distribution is used for goodness of fit.  
 a) Binominal`                      b) Normal  
 c) Chi-square                      d) Poisson

- 9) \_\_\_\_\_ is a structure database.  
 a) PDB                      b) SWISS-PROT                      c) Gen Bank                      d) TrEMBL
- 10) Gen Bank has \_\_\_\_\_ divisions  
 a) 4                              b) 11                              c) 13                              d) 17
- 11) In a phylogenetic tree Root represents \_\_\_\_\_  
 a) Common ancestor                      b) taxa  
 c) Branching                              d) Species
- 12) Swiss-Prot is a \_\_\_\_\_  
 a) Nucleic and sequence database                      b) Structure database  
 c) Protein sequence database                      d) Composite database
- 13) TrMBL contains all the translations of sequences from \_\_\_\_\_  
 a) DDBJ                      b) EMBL                      c) GenBank                      PDB
- 14) DDBJ stands for \_\_\_\_\_  
 a) DNA Data Base of Japan                      b) DNA Data Bank of Japan  
 c) DNA Data Book of Japan                      d) None of these.

## Part II

**Answer any four questions from the following:**

- Q.2** What is ExPASy? Discuss various tools available at ExPASy. **14**
- Q.3** Explain homology modeling. Add a note on BLAST **14**
- Q.4** Give a detailed account on nucleic acid databases **14**
- Q.5 Write short answer (any two):** **14**  
 a) Explain in detail stratified & cluster sampling.  
 b) What is dispersion? Explain its measures.  
 c) Describe briefly regression methods.
- Q.6 Write short notes on any two:** **14**  
 a) What is F-Test? Explain with example.  
 b) Define alternative hypothesis with examples.  
 c) Describe in detail one tailed & two tailed test.

Seat No.	
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**M.Sc. (Semester – II) (New) (CBCS) Examination, 2017**  
**GEOGRAPHY**  
**REGIONAL GEOGRAPHY OF INDIA (OET)**

Day & Date: Friday, 28-04-2017

Max. Marks: 70

Time: 10.30 AM to 01.00 PM

- N.B. :**
- 1) *All questions are compulsory.*
  - 2) *All questions Carry equal marks*
  - 3) *Use of stencils is allowed.*
  - 4) *Draw neat diagrams wherever necessary.*

**Q.1 A) Choose the correct alternative given in the bracket. 07**

- 1) \_\_\_\_\_ hills are located at the north eastern edge of Chota Nagpur Plateau.  
 a) Rajmahal    b) Mikir    c) Parasnath    d) Garo
- 2) The oldest mountains in India are \_\_\_\_\_.  
 a) Arvalis    b) Vindhyas    c) Satpuras    d) Nilgiri Hills
- 3) The South-West monsoon contributes \_\_\_\_\_ of total rain in India.  
 a) 86%    b) 50%    c) 22%    d) 100%
- 4) \_\_\_\_\_ is the most widespread and most productive soil in north India.  
 a) Alluvial Soil    b) Laterite soil  
 c) Black soil    d) Red soil
- 5) \_\_\_\_\_ rock system is the main source of coal in India.  
 a) Gondwana    b) Cuddappa    c) Vindhyan    d) Dharwar
- 6) \_\_\_\_\_ State touches maximum number of States in India.  
 a) Madhya Pradesh    b) Rajasthan  
 c) Delhi    d) Uttar Pradesh
- 7) The coast of Tamilnadu has \_\_\_\_\_ forests.  
 a) Dry Deciduous    b) Moist Deciduous  
 c) Dry Evergreen    d) Evergreen

**B) Fill in the blanks:**

**07**

- 1) \_\_\_\_\_ a food grain crop occupies the largest part of the cropped area in India.
- 2) The river Godavari joins Bay of Bengal near \_\_\_\_\_.
- 3) Bokaro coal mine is located in the \_\_\_\_\_ State of India.
- 4) \_\_\_\_\_ forest is economically useful in India.
- 5) \_\_\_\_\_ port has been formed for export of iron ore.
- 6) \_\_\_\_\_ is the predominant type of Indian agriculture.
- 7) The largest number of sugar mills are located in \_\_\_\_\_ State of India.

**Q.2** Discuss on the classification of natural vegetation in India. **14**

**Q.3** Describe in detail the distribution and production of petroleum in India. **14**

**OR**

Give a brief account of major industrial regions of India.

**Q.4** Write short answers for the following questions (any two): **14**

- 1) The peninsular region of India.
- 2) Write a geographical essay on Uttaranchal State.
- 3) Describe the distribution of iron ore in India.
- 4) Give an account of sugarcane production in India.

**Q.5** Write short answers for the following questions (any two): **14**

- 1) Sundaraban delta region in India.
- 2) The Gengetic plain region.
- 3) The concept of Micro regions.
- 4) Agro- climatic regions of India.

(मराठी रूपांतर)

- सुचना : 1) सर्व प्रश्न अनिवार्य आहेत.  
2) उजवीकडील अंक गुण दर्शवतात.  
3) आवश्यक तेथे सुबक आकृत्या काढा.  
4) आवश्यक तेथे सुबक आकृत्या व नकाशे काढा.

प्र.1 अ. योग्य पर्याय निवडा व उत्तरे लिहा: 07

- छोट्या नागपूर पठाराच्या ईशान्येस ——— टेकड्या तयार झालेल्या आहेत.  
अ. राजमहाल      ब. मिकीर      क. पारसनाथ      ड. गारो
- हा भारतातील जुना पर्वत आहे.  
अ. अरवली      ब. विंध्य  
क. सातपुडा      ड. निलगिरी हिल्स
- नैऋत्य मान्सून वाऱ्यापासून भारतात एकूण ——— पाऊस पडतो.  
अ. 68 %      ब. 50 %      क. 22 %      ड. 100 %
- उत्तर भारतामध्ये सर्वाधिक विस्तारित व जास्त उत्पादन देणारी ——— मृदा आहे.  
अ. गाळाची      ब. जांभा      क. रेगूर      ड. तांबडी
- भारतात ——— खडकप्रणाली हा कोळशाचा मुख्य स्रोत आहे.  
अ. गोंडवाना      ब. कडाप्पा      क. विंध्ययन      ड. धारवार
- या राज्याचा जास्तीत-जास्त संख्येने स्पर्श भारतातील राज्यांचा येतो.  
अ. मध्य प्रदेश      ब. राजस्थान      क. दिल्ली      ड. उत्तर प्रदेश
- तामीळनाडू किनाऱ्याला ——— प्रकारची जंगले आढळतात.  
अ. शुष्क पानझडी      ब. आर्द्र पानझडी  
क. शुष्क सदाहरित      ड. सदाहरीत

ब. गाळलेल्या जागा भरा. 07

- भारतातील ——— या धान्य पिकाचे मोठ्या प्रमाणात क्षेत्र आहे.
- गोदावरी नदी बंगालच्या उपसागराजवळ ——— येथे मिळते.
- राज्यात बोकारो कोळसा खाण आहे.
- भारतातील आर्थिकदृष्ट्या ——— हे उपयोगी जंगल आहे.
- लोहखनिजाच्या निर्यातीसाठी ——— या बंदराची निर्मिती केली आहे.
- प्रकारची भारतीय शेती महत्त्वाची आहे.
- राज्यामध्ये भारतात सर्वाधिक साखर कारखाने आढळतात.

प्र.2 भारतातील नैसर्गिक वनस्पतीच्या वर्गीकरणावर चर्चा करा. 14

प्र.3 भारतातील खनिज तेलाचे वितरण व उत्पादनाचे सविस्तर वर्णन करा. 14

किंवा

भारतातील मुख्य औदयोगिक विभागाचा थोडक्यात आढावा घ्या.

- प्र.4 थोडक्यात उत्तरे लिहा (कोणतेही दोन) 14
1. भारतीय विपकल्पीय प्रदेश
  2. उत्तरांचल राज्यावर भौगोलिक निबंध लिहा.
  3. भारतातील लोहखनिजाचे वितरण वर्णन करा.
  4. भारतातील ऊस उत्पादनाची माहिती द्या.
- प्र.5 थोडक्यात उत्तरे लिहा (कोणतेही दोन) 14
1. भारतातील सुंदरबन त्रिभुज प्रदेश
  2. गंगेचे मैदानी प्रदेश
  3. सूक्ष्म प्रदेश संकल्पना
  4. भारताचे कृषी हवामान प्रदेश





**Q.3 A)** Explain the distribution and production of automobile industry in Maharashtra. **14**

**OR**

**B)** State the importance of transportation and explain distribution of railway in Maharashtra.

**Q.4 Write short answers for the following questions (any two): 14**

- 1) Explain types of soils in Maharashtra.
- 2) Describe distribution of coal in Maharashtra.
- 3) Explain distribution and production of wheat in Maharashtra.
- 4) Describe the tourism centers in Maharashtra.

**Q.5 Write short answers for the following questions (any two): 14**

- 1) Natural vegetation in Maharashtra.
- 2) Iron-ore in Maharashtra
- 3) Concept of eco-tourism
- 4) Roads in Maharashtra.



प्र.5 टीपा लिहा. (कोणतेही दोन)

14

1. महाराष्ट्रातील नैसर्गिक वनस्पती
2. महाराष्ट्रातील लोह खनिज
3. ईको पर्यटनाची संकल्पना
4. महाराष्ट्रातील रस्ते

Seat No.	
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**M.A. (Semester – II) (New) (CBCS) Examination, 2017**  
**ECONOMICS**  
**INDIAN ECONOMY (OET)**

Day & Date: Friday, 28-04-2017

Max. Marks: 70

Time: 10.30 AM to 01.00 PM

**N.B. :** 1) **All questions are compulsory.**  
 2) **Figure to right indicate full marks.**

**Q.1 Multiple choice questions:**

**14**

- 1) SLR means \_\_\_\_\_.  
 a) Statutory Liquidity Ratio  
 b) Statistical low of Ration  
 c) Supportive liquidity Ratio  
 d) None of these
- 2) MSP is \_\_\_\_\_.  
 a) Maximum Support Price  
 b) Minimum Support Price  
 c) Minimum Special Price  
 d) None of these
- 3) CACP established in \_\_\_\_\_.  
 a) 1980  
 b) 1985  
 c) 1965  
 d) 1974
- 4) 'Planned economy for India' this book is written by \_\_\_\_\_.  
 a) J. Nehru  
 b) Mahatma Gandhi  
 c) M. Visvevaraya  
 d) None of these
- 5) HYVP means \_\_\_\_\_.  
 a) High Yielding Varieties of Pesticides  
 b) High Yielding Varieties of Product  
 c) High Yielding Varieties of Programme  
 d) None of the above
- 6) \_\_\_\_\_ is the Apex Financial Institution that controls the share market.  
 a) SEBI  
 b) RBI  
 c) FCI  
 d) IRDI
- 7) NABARD was established in \_\_\_\_\_.  
 a) 1980  
 b) 1981  
 c) 1982  
 d) 1983

**Q.2 Write short notes (any 4 out of 5)**

**14**

- 1) Economics Planning
- 2) Disinvestment
- 3) Public Sector Enterprises
- 4) MSP
- 5) SEBI

- Q.3 Write short answers (any 2 out of 3) 14**
- 1) Explain the characteristics of small scale industries.
  - 2) Explain the problems of agriculture marketing in India.
  - 3) Explain the strategy of Seventh and Eighth Five Year Plan.
- Q.4 Descriptive type questions 14**
- 1) Explain the various sources of agricultural finance.
- OR**
- 2) Discuss the 'Green Revolution in India'.
- Q.5 Evaluate the 'Public Distribution System' In India. 14**

Seat No.	
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**M.A. (Semester – II) (New) (CBCS) Examination, 2017**  
**HISTORY AND ARCHAEOLOGY**  
**INDIAN TOURISM (OET)**

Day & Date: Friday, 28-04-2017

Max. Marks: 70

Time: 10.30 AM to 01.00 PM

**N.B. :** 1) *All questions are compulsory.*  
 2) *Figure to right indicate full marks.*

**Q.1 Select appropriate word:** **14**

- 1) \_\_\_\_\_ is the popular tourist destination in Maharashtra.  
 a) Daulatabad                      b) Ajanta                      c) Karle                      d) Bedse
- 2) International tourism is useful for \_\_\_\_\_.  
 a) Achieving national unity                      b) Economic prosperity  
 c) Cultural progress                      d) None of these
- 3) The Chaitya Hall at \_\_\_\_\_ is the longest and most magnificent in Maharashtra.  
 a) Kanheri                      b) Karle                      c) Junnar                      d) Amravati
- 4) The famous Ambarnath Temple is located at \_\_\_\_\_ district.  
 a) Pune                      b) Thane                      c) Kolhapur                      d) Satara
- 5) The famous Tin-Tal caves are situated in \_\_\_\_\_ tourist place.  
 a) Karle                      b) Bhaje                      c) Ajanta                      d) Ellora
- 6) \_\_\_\_\_ is the most essential factor for external tourism.  
 a) Guide                      b) Airbus                      c) Nationality                      d) Passport
- 7) Travelers from \_\_\_\_\_ country visited ancient India.  
 a) China                      b) Japan                      c) France                      d) England

**Q.2 Write short notes of the following: (any four of the following)** **14**

- 1) Agro Tourism
- 2) Bhaje Caves
- 3) State Tourism Department
- 4) Aihole Museum
- 5) ICAO Organization

**Q.3 Write a short answers of the following: (any two out of three)** **14**

- 1) Explain the Purpose & Scope of Tourism.
- 2) Write in detail about work of ITDC.
- 3) Discuss the qualities of tourist guide.

**Q.4 Answer any one of the following:** **14**

Describe the place of tourism in modern life with suitable examples.

**OR**

Why tourists are attracted towards the Elephanta cave? Explain.

**Q.5 Elaborate the 'New Trends in Tourism'.** **14**

Seat No.	
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**M.A. (Semester – II) (New) (CBCS) Examination, 2017**

**RURAL DEVELOPMENT  
SOCIAL MARKETING (OET)**

Day & Date: Friday, 28-04-2017

Max. Marks: 70

Time: 10.30 AM to 01.00 PM

**N.B. :** 1) *All questions are compulsory.*  
2) *Figure to right indicate full marks.*

**Q.1 Multiple choice questions:**

**14**

- 1) Which of the following does not include four 'Ps' of Marketing?  
a) Product      b) Purpose      c) Price      d) Promotion
- 2) State is one of \_\_\_\_\_ agencies of Social Marketing.  
a) Government      b) None-government  
c) International      d) Corporate
- 3) Market is essentially a \_\_\_\_\_ institution  
a) Educational      b) Social      c) Special      d) None of the above
- 4) BAIF, Pune is a \_\_\_\_\_.  
a) State      b) Corporate agencies  
c) International agencies      d) NGO's
- 5) What is the long form of IEC?  
a) Information Education and Communication  
b) Information Election and Communication  
c) Information Education and Coordination  
d) Identification Education and Communication
- 6) Which of the following element does not include in SWOT analysis?  
a) Strength      b) Weakness      c) Opportunity      d) Technique
- 7) Which of the following is not considered part of marketing communication mix?  
a) Advertising      b) Sales promotion  
c) Personal selling      d) Pricing policy

**Q.2 Write short notes (any 4 out of 5)**

**14**

- 1) Globalisation
- 2) Ethnic packaging
- 3) Segmentation
- 4) Social marketing mix
- 5) 4 Cs



- Q.3 Short answer type questions(any 2 out of 3) 14**
- 1) What is meant by social marketing research?
  - 2) What do you mean by life cycle of cause?
  - 3) What are the functions of International donor agencies?
- Q.4 Descriptive type questions with internal choice(any one) 14**
- 1) What is the importance of packaging in social marketing?
  - 2) What are the social policies of marketing?
- Q.5 Descriptive type questions: 14**
- What is the spirit of social marketing? And explain the role of NGO's in social marketing.

Seat No.	
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**M.A. (Semester – II) (New) (CBCS) Examination, 2017**  
**RURAL DEVELOPMENT**  
**WRITING COMMUNICATION SKILL AND CURRENT AFFAIRS(OET)**

Day &amp; Date: Friday, 28-04-2017

Max. Marks: 70

Time: 10.30 AM to 01.00 PM

**N.B. :** 1) *All questions are compulsory.*  
 2) *Figures to the right indicate full marks.*

**Q.1 Multiple Choice Questions: (2 Marks Each) 14**

- 1) \_\_\_\_\_ is a type of writing.
  - a) Letter
  - b) Agenda
  - c) Memo
  - d) All of these
- 2) CV means \_\_\_\_\_
  - a) Curriculum Vitae
  - b) Course Vitae
  - c) Communication Vitae
  - d) None of these
- 3) \_\_\_\_\_ is a type of feedback.
  - a) Negative
  - b) Positive
  - c) Oral
  - d) All of these
- 4) Stylus is used for \_\_\_\_\_
  - a) Writing
  - b) Listening
  - c) Speaking
  - d) None of these
- 5) \_\_\_\_\_ is the sources in communication process.
  - a) Person
  - b) Internet
  - c) Both (a) & (b)
  - d) None of these
- 6) Bio data includes \_\_\_\_\_
  - a) Nationality
  - b) Experience
  - c) Educational Qualification
  - d) All of these
- 7) IN E-mail 'E' stands for \_\_\_\_\_
  - a) Electronic
  - b) Electrical
  - c) Easy
  - d) None of these

**Q.2 Write short notes (any four): 14**

- 1) Words
- 2) Modern Tools of Writing
- 3) Understanding the Subject
- 4) Information Sources
- 5) Group Discussion

**Q.3 Short Answer Type Questions (any two): 14**

- 1) Describe stages of Public Speaking.
- 2) Write down the use of references.
- 3) What is Stress Management?

**Q.4 Descriptive Type Questions with internal choice: 14**

- 1) What are the types of communication?

**OR**

- 2) Write on topic 'Listening Ability'.

**Q.5 Write an essay on topic 'Evolution and Development of Writing Skill' 14**

(मराठी रूपांतर)

सुचना : 1) सर्व प्रश्न अनिवार्य आहेत.  
2) उजवीकडील अंक गुण दर्शवतात.

- प्र.1 योग्य पर्याय निवडा व उत्तरे लिहा: 14
1. ——— हे लेखनाचा प्रकार आहे.  
अ. पत्र  
क. ममो  
ब. अजेंडा  
ड. यापैकी सर्व
  2. सी. व्ही. म्हणजे ———  
अ. करिक्युलम वाइटी  
क. कम्युनिकेशन वाइटी  
ब. कोर्स वाइटी  
ड. यापैकी नाही
  3. ——— हे प्रतिक्रियेचा प्रकार आहे.  
अ. नकारात्मक  
ब. सकारात्मक  
क. तोंडी  
ड. यापैकी सर्व
  4. स्टायलस हे ——— साठी वापरले जाते.  
अ. लेखन  
क. बोलणे  
ब. ऐकणे  
ड. यापैकी नाही
  5. ——— हे संवाद प्रक्रियेतील स्रोत आहे.  
अ. व्यक्ती  
क. दोन्ही (अ) आणि (ब)  
ब. इंटरनेट  
क. यापैकी नाही
  6. बायोडेटा मध्ये ——— चा आंतर्भाव होतो.  
अ. राष्ट्रीयत्व  
क. शैक्षणिक पात्रता  
ब. अनुभव  
ड. यापैकी सर्व
  7. E-mail मध्ये E म्हणजे ———  
अ. इलेक्ट्रॉनिक  
क. ईझी  
ब. इलेक्ट्रिकल  
ड. यापैकी नाही
- प्र.2 टिपा लिहा. (कोणत्याही चार) 14
1. शब्द
  2. लेखनाची आधुनिक साधने
  3. विषयाची जाण
  4. माहितीचे स्रोत
  5. गट संवाद
- प्र.3 लघुत्तरी प्रश्न. (कोणतेही दोन ) 14
1. सार्वजनिक ठिकाणी बोलण्याचे टप्पे विशद करा.
  2. संदर्भाचे वापर लिहा.
  3. ताण-तणाव व्यवस्थापन म्हणजे काय?
- प्र.4 दिर्घोत्तरी प्रश्न अंतर्गत पर्यायासह. (कोणतेही एक) 14
1. संवादाचे प्रकार कोणते आहेत?
- अथवा
2. 'श्रवण क्षमता' या विषयावरती लिहा.
- प्र.5 'लेखन कौशल्याचा उदय आणि विकास' या विषयवर निबंध लिहा. 14

Seat No.	
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**M.A. (Semester – II) (New) (CBCS) Examination, 2017**

**MASS COMMUNICATION**

**WRITING AND COMMUNICATION SKILLS (OET)**

Day & Date: Friday, 28-04-2017

Max. Marks: 70

Time: 10.30 AM to 01.00 PM

**N.B. :** 1) *All questions are compulsory.*  
2) *Figures to the right indicate full marks.*

**Q.1 Multiple Choice Questions: (2 Marks Each) 14**

- 1) \_\_\_\_\_ is a type of writing.
 

a) Letter	b) Agenda
c) Memo	d) All of these
- 2) CV means \_\_\_\_\_
 

a) Curriculum Vitae	b) Course Vitae
c) Communication Vitae	d) None of these
- 3) \_\_\_\_\_ is a type of feedback.
 

a) Negative	b) Positive	c) Oral	d) All of these
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- 4) Stylus is used for \_\_\_\_\_
 

a) Writing	b) Listening
c) Speaking	d) None of these
- 5) \_\_\_\_\_ is the sources in communication process.
 

a) Person	b) Internet
c) Both (a) & (b)	d) None of these
- 6) Bio data includes \_\_\_\_\_
 

a) Nationality	b) Experience
c) Educational Qualification	d) All of these
- 7) IN E-mail 'E' stands for \_\_\_\_\_
 

a) Electronic	b) Electrical
c) Easy	d) None of these

**Q.2 Write short notes (any four): 14**

- 1) Words
- 2) Modern Tools of Writing
- 3) Understanding the Subject
- 4) Information Sources
- 5) Group Discussion

**Q.3 Short Answer Type Questions (any two): 14**

- 1) Describe stages of Public Speaking.
- 2) Write down the use of references.
- 3) What is Stress Management?

**Q.4 Descriptive Type Questions with internal choice: 14**

- 1) What are the types of communication?

**OR**

- 2) Write on topic 'Listening Ability'.

**Q.5 Write an essay on topic 'Evolution and Development of Writing Skill' 14**

(मराठी रूपांतर)

सुचना : 1) सर्व प्रश्न अनिवार्य आहेत.  
2) उजवीकडील अंक गुण दर्शवतात.

- प्र.1 योग्य पर्याय निवडा व उत्तरे लिहा: 14
1. ——— हे लेखनाचा प्रकार आहे.  
अ. पत्र  
क. ममो  
ब. अजेंडा  
ड. यापैकी सर्व
  2. सी. व्ही. म्हणजे ———  
अ. करिक्युलम वाइटी  
क. कम्युनिकेशन वाइटी  
ब. कोर्स वाइटी  
ड. यापैकी नाही
  3. ——— हे प्रतिक्रियेचा प्रकार आहे.  
अ. नकारात्मक  
ब. सकारात्मक  
क. तोंडी  
ड. यापैकी सर्व
  4. स्टायलस हे ——— साठी वापरले जाते.  
अ. लेखन  
क. बोलणे  
ब. ऐकणे  
ड. यापैकी नाही
  5. ——— हे संवाद प्रक्रियेतील स्रोत आहे.  
अ. व्यक्ती  
क. दोन्ही (अ) आणि (ब)  
ब. इंटरनेट  
ड. यापैकी नाही
  6. बायोडेटा मध्ये ——— चा आंतर्भाव होतो.  
अ. राष्ट्रीयत्व  
क. शैक्षणिक पात्रता  
ब. अनुभव  
ड. यापैकी सर्व
  7. E-mail मध्ये E म्हणजे ———  
अ. इलेक्ट्रॉनिक  
क. ईझी  
ब. इलेक्ट्रिकल  
ड. यापैकी नाही
- प्र.2 टिपा लिहा. (कोणत्याही चार) 14
1. शब्द
  2. लेखनाची आधुनिक साधने
  3. विषयाची जाण
  4. माहितीचे स्रोत
  5. गट संवाद
- प्र.3 लघुत्तरी प्रश्न. (कोणतेही दोन ) 14
1. सार्वजनिक ठिकाणी बोलण्याचे टप्पे विशद करा.
  2. संदर्भाचे वापर लिहा.
  3. ताण-तणाव व्यवस्थापन म्हणजे काय?
- प्र.4 दिर्घोत्तरी प्रश्न अंतर्गत पर्यायासह. (कोणतेही एक) 14
1. संवादाचे प्रकार कोणते आहेत?
- अथवा
2. 'श्रवण क्षमता' या विषयावरती लिहा.
- प्र.5 'लेखन कौशल्याचा उदय आणि विकास' या विषयवर निबंध लिहा. 14

Seat No.	
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**M.Com. (Semester – II) (New) (CBCS) Examination, 2017**

**M.COM**

**ENTREPRENEURSHIP (OET)**

Day & Date: Friday, 28-04-2017

Max. Marks: 70

Time: 10.30 AM to 01.00 PM

**N.B. :** 1) *All questions are compulsory.*  
2) *Figures to the right indicate full marks.*

**Q.1 Multiple Choice Questions: (2 Marks Each) 14**

- 1) The resistance of employees in an organization against flexibility, growth and diversification can be overcome by developing \_\_\_\_\_
  - a) Entrepreneurship
  - b) Intrapreneurship
  - c) Managerial domain
  - d) Administrative domain
- 2) For the success of business plan the goals should be \_\_\_\_\_
  - a) Limitless
  - b) Generalized
  - c) Specific
  - d) Imaginary
- 3) \_\_\_\_\_ is not an essential part of the contract.
  - a) All the parties involved should be named
  - b) Transaction should be describe in detail
  - c) Obtain signatures of the persons involved
  - d) Place where contract takes place
- 4) Normally sponsor links are used in \_\_\_\_\_ type of promotion.
  - a) Publicity
  - b) Trade shows
  - c) Personal selling
  - d) Internet advertising
- 5) \_\_\_\_\_ factors should be considered while assessing the space for business.
  - a) Parking
  - b) Access from roadways to facility
  - c) Delivery rates
  - d) All of the above
- 6) \_\_\_\_\_ work environments should be good for starting the new enterprises.
  - a) Finance and marketing
  - b) Finance and R&D
  - c) Marketing and R&D
  - d) Marketing and IT
- 7) \_\_\_\_\_ is to be considered in economy while conducting environmental analysis.
  - a) GNP
  - b) Disposable income
  - c) Unemployment
  - d) Channel of distribution
- 8) \_\_\_\_\_ is commonly used to measure the short-term solvency of the venture.
  - a) Debt to equity ratio
  - b) Current ratio
  - c) Profitability ratio
  - d) Activity ratio

- 9) \_\_\_\_\_ is a barrier to new product creation and development.
- a) Trial and error
  - b) Opportunity parameter
  - c) Opportunity cost
  - d) Intrapreneurship culture
- 10) Target market is \_\_\_\_\_
- a) A group of customers a venture reaches by accident
  - b) All consumers who purchase the venture's product
  - c) A specific group of potential customers towards which a venture aims its marketing plan
  - d) A chain of discount stores
- 11) Capital rising entirely depends on the entrepreneur in \_\_\_\_\_
- a) Corporation
  - b) Sole proprietorship
  - c) Partnership
  - d) All of above
- 12) Developing a new idea through inquiry and testing is called \_\_\_\_\_
- a) Heuristics
  - b) Forced relationship
  - c) Scientific method
  - d) Value analysis
- 13) A patent is granted for a specified amount of time because of the assumption \_\_\_\_\_
- a) That during this time firm will cover its development costs
  - b) That firm will earn a sufficient profit during this period
  - c) To limit the monopoly of the firm
  - d) That it will stimulate idea and development of a better product
- 14) \_\_\_\_\_ measures how efficiently the organization is using its assets.
- a) Liquidity Ratios
  - b) Leverage Ratios
  - c) Operating Ratios
  - d) Profitability Ratios

**Q.2 Write short notes: 14**

- 1) Mergers and Acquisitions
- 2) Characteristics of entrepreneur

**Q.3 Write short answers: 14**

- 1) State methods of generating ideas
- 2) Explain the terms Patents. Trademarks and Copyrights

**Q.4 Answer any one of the following questions: 14**

- 1) What is entrepreneurial finance? Discuss various sources of finance for entrepreneurs?
- 2) Briefly explain about Women entrepreneurs and the challenges faced by them.

**Q.5 Answer any one of the following questions: 14**

- 1) What is functional plan? Explain in detail about steps in marketing plan for the new venture.
- 2) State role of entrepreneurship in economic development and the factors affecting on emergence of entrepreneurship.

Seat No.	
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**M.C.A. (SCI) (Semester – II) (New) (CBCS) Examination, 2017**

**M.C.A**

**OFFICE AUTOMATION (OET)**

Day & Date: Friday, 28-04-2017

Max. Marks: 70

Time: 10.30 AM to 01.00 PM

- N.B. :** 1) Q.(1) and (2) are **compulsory**.  
 2) Answer **any three** questions from Q.3 to Q.7.  
 3) All questions carry **equal** marks.

**Q.1 A) Choose correct alternatives.**

**10**

- 1) CPU is considered as the \_\_\_\_\_ of the computer.  
 a) Brain      b) Heart      c) Software      d) None of these
- 2) A new presentation can be created from \_\_\_\_\_.  
 a) Blank Presentation      b) From Existing Presentation  
 c) From Design Template      d) All of above
- 3) A feature that displays only the data in column(s) according to specified criteria is called \_\_\_\_\_.  
 a) Formula      b) Sorting      c) Filtering      d) Pivot
- 4) The process of removing unwanted part of an image is called \_\_\_\_\_.  
 a) Hiding      b) Bordering      c) Cropping      d) Cutting
- 5) Where footnotes appear in a document \_\_\_\_\_.  
 a) End of document      b) Bottom of a page  
 c) End of Heading      d) None of these
- 6) The intersection of a column and a row on a worksheet is called \_\_\_\_\_.  
 a) Column      b) Value      c) Address      d) Cell
- 7) Which of the following creates a drop down list of values to choose from \_\_\_\_\_?  
 a) Ole Object      b) Hyperlink  
 c) Memo      d) Lookup wizard
- 8) \_\_\_\_\_ software is collection of programs designed to operate, control, and extend the processing capabilities of the computer itself.  
 a) System      b) Application      c) Window      d) None of these



