

# NALANDA OPEN UNIVERSITY

Assignment Questions  
[for Annual Examination, 2020]

## MCA, PART-III

### सत्रीय कार्य जमा करने की विधि

नालन्दा खुला विश्वविद्यालय के विद्यार्थियों के लिए, निर्धारित प्रोग्राम्स में, सत्रीय कार्य जमा करना आवश्यक है। इसके लिये प्रत्येक पत्र में सम्बन्धित विद्यार्थी को तीन प्रश्न (प्रत्येक प्रश्न 10-10 अंकों के) दिये गये हैं, जिनमें से दो प्रश्नों (कुल 20 अंक) का उत्तर अपने हस्तलिपि में विश्वविद्यालय द्वारा दी हुई सत्रीय कार्य उत्तरपुस्तिका में लिखना है। विद्यार्थियों से आग्रह है कि वे प्रत्येक पत्र के लिये दिये गये, निर्देश के अनुसार, स्वअध्ययन, स्वविवेक और अपनी प्रतिभा के अनुसार दो प्रश्नों का उत्तर अपने हस्तलिपि में लिखें। यह कार्य उन्हें अपने घर में रहकर करना है। किसी भी पुस्तक या नालन्दा खुला विश्वविद्यालय द्वारा दी गयी पाठ्यसामग्री से नकल करने पर उनकी उत्तरपुस्तिका का मूल्यांकन नहीं किया जायेगा। साथ ही, नियमानुसार, विश्वविद्यालय उनके विरुद्ध अलग से भी सख्त कार्यवाही कर सकेगा। विद्यार्थियों से अनुरोध है कि सत्रीय कार्य की उत्तरपुस्तिका तथा उसके लिफाफा पर वे अपना नाम, अनुक्रमांक तथा पत्र संख्या अवश्य लिखें। नामांकन संख्या (अनुक्रमांक) गलत होने पर सत्रीय कार्य की उत्तरपुस्तिका का मूल्यांकन नहीं किया जायेगा। प्रत्येक पत्र के सत्रीय कार्य को अलग-अलग लिफाफों में डालकर सील कर दें और सील बन्द लिफाफा को वे सम्बन्धित पत्र की लिखित परीक्षा के दिन अपने साथ परीक्षा केन्द्र पर लेते आयें, अर्थात्, जिस दिन प्रथम पत्र की लिखित परीक्षा हो, उस दिन वे प्रथम पत्र से सम्बन्धित सत्रीय कार्य की उत्तरपुस्तिका का सील्ड लिफाफा अपने साथ परीक्षा हॉल में ले आयें और उसे अपने सीट पर रख लें। इसी प्रकार, जिस दिन द्वितीय पत्र की लिखित परीक्षा हो, उसी दिन द्वितीय पत्र से सम्बन्धित सत्रीय कार्य की उत्तर पुस्तिका का सील्ड लिफाफा ले आयें। तदनुसार, अन्य पत्रों की लिखित परीक्षा के दिन, उन पत्रों से सम्बन्धित सील्ड लिफाफा अपने साथ ले आयें और उसे अपने सीट पर रख लें। प्रत्येक दिन परीक्षा से सम्बन्धित वीक्षकगण आपके सीट से आपका सील्ड लिफाफा संग्रह कर लेंगे और उपस्थित पंजी पर आपका हस्ताक्षर ले लेंगे, जो इस बात का प्रमाण होगा कि आपने पत्र के लिए अपना सत्रीय कार्य जमा कर दिया है। सत्रीय कार्य की उत्तर पुस्तिका को किसी भी हालात में डाक अथवा कुरियर से नहीं भेजें क्योंकि विश्वविद्यालय इसको स्वीकार नहीं करेगा। किसी भी पत्र में Theory Paper की परीक्षा समाप्त हो जाने के बाद, उस पत्र से सम्बन्धित सत्रीय-कार्य पुस्तिका स्वीकार नहीं की जायेगी।

### Methods of Submission of Assignment

Each student shall be required to submit two assignments of 20 marks in each theory paper of all programmes where no practical/project work is prescribed. For this purpose, the University administration will set out and provide to each student three different topics in each theory paper; out of which he/she will be required to write out and submit assignment work only on two topics of his/her choice in the answer book provided to him/her for this purpose by the University. Both the assignments, each carrying equal marks, shall be evaluated for the purpose of examination. It is again emphasized that writing of two assignment in each theory paper, where no practical/project work is prescribed, is compulsory and unless it is done and assignment copy submitted to the University on the date of the examination of the theory portion of the concerned paper, the study requirement of the student will not be taken to have been completed and he/she will be declared to have failed. Besides, it has, now, been decided by the University to club the marks obtained by a student in his/her assignment work/project work with the marks obtained by him/her in the written examination of that paper to determine his/her pass percentage in the concerned paper. Hence, it is in student's interest that he/she submits the assignment work in time. Students are also advised to prepare their assignments very carefully and meticulously. They must write assignment in their own handwriting. Assignment answers should not be copied from the learning material supplied by the University or from any other source. Assignments must be submitted in the answer books provided to the students by the University for this purpose. In no case, assignment written assignment written in private copy will be accepted by the University. In case of loss of assignment copy, fresh assignment copy may be procured from the University on payment of Rs. 100.00 by bank draft. Similarly, Project-Work, wherever prescribed, must also be submitted by the fixed date, failing which the student will be deemed to have failed in the concerned subject.

## ASSIGNMENT QUESTIONS (सत्रीय कार्य)

### MCA, PART-III [NEW]

#### PAPER-XVII [NEW]

#### (PRACTICAL WORK)

#### PAPER-XVIII [NEW]

Answer Any Two Questions. (सभी प्रश्न 10–10 अंकों के हैं)

1. What are stored procedures and triggers in database? Explain with the help of an example.
2. Define methods used for evaluation of expressions? How you define cost based optimization?
3. Explain the levels of Security in Database. What is access control?

#### PAPER-XIX [NEW]

Answer Any Two Questions. (सभी प्रश्न 10–10 अंकों के हैं)

1. What is a regular expression? Explain the rules for writing regular expressions. Write some regular expressions and explain them.
2. Explain Chomsky classification of Grammar with examples. What is a parse tree?
3. Define symbol table. Discuss in detail the attributes of symbol table. What is an Abstract syntax tree.

#### PAPER-XX [NEW]

Answer Any Two Questions. (सभी प्रश्न 10–10 अंकों के हैं)

1. Explain divide and conquer technique. Give some examples of Divide and Conquer algorithm.
2. Explain Matrix chain multiplication and Longest Common Sequence with the help of an example.
3. Discuss about the random variables and basic inequalities with an example. Define the distribution function for the random variables.

#### PAPER-XXI [NEW]

Answer Any Two Questions. (सभी प्रश्न 10–10 अंकों के हैं)

1. What is Constraint Satisfaction Problems ? Explain the steps of solving Constraints Satisfaction Problems.
2. What is Fuzzy logic ? Discuss different types of operations on fuzzy logic with the help of an example.
3. What is Prolog ? Define the properties of PROLOG. Explain backtracking and Unification inferencing system in PROLOG with the help of an example.

#### PAPER-XXII [NEW]

Answer Any Two Questions. (सभी प्रश्न 10–10 अंकों के हैं)

1. Solve the following system using the Lu decomposition method

$$6x_1 - 2x_2 = 14$$

$$9x_1 - x_2 + x_3 = 21$$

$$3x_1 - 7x_2 + 5x_3 = 9$$

2. Solve the following systems using the Gauss elimination method

$$3x_1 + 2x_2 + 3x_3 = 5$$

$$x_1 + 4x_2 + 2x_3 = 4$$

$$2x_1 + 4x_2 + 8x_3 = 8$$

3. (a) Evaluate the Integral  $\int_0^6 (x^2 + x + 2) dx$  using Trapezoidal rule with  $h = 1.0$ .

- (b) Evaluate the Integral  $\int_0^1 \frac{dx}{1+x}$  using Simpson's  $\frac{3}{8}$ th rule with  $h = \frac{1}{3}$ .

#### PAPER-XXIII & XXIV [NEW]

#### (PRACTICAL WORK)

### MCA, PART-III [OLD]

#### PAPER-XXI [OLD]

Answer Any Two Questions. (सभी प्रश्न 10–10 अंकों के हैं)

1. What is a Critical Section ? Give a monitor solution to the Dining philosophers' problem and explain.
2. Explain RAID with different levels. Give the features of each level.
3. What is a Deadlock? When does it occur? Discuss the necessary conditions of deadlock with the help of an example.

**PAPER-XXII [OLD]**

**Answer Any Two Questions.** (सभी प्रश्न 10–10 अंकों के हैं)

1. What is functional dependency? How does it help in the process of Normalization of Database? Explain.
2. Define methods used for evaluation of expressions? How you define cost based optimization?
3. Compare and contrast between OODBMS and Object Relational Database.

**PAPER-XXIII [OLD]**

**(PRACTICAL WORK)**

**PAPER-XXIV [OLD]**

**Answer Any Two Questions.** (सभी प्रश्न 10–10 अंकों के हैं)

1. How can two servlets share information using the system property list? In an inventory application, one servlet stores the stock of an item in a system property. Another servlet uses this property to find whether an order quantity can be fulfilled or must be declined. Show how this can be done through a Java program.
2. Explain the need of entities in XML documents. Describe all the three types of entities with the help of an example.
3. Explain the purpose of different types of JDBC SQL statements.

**PAPER-XXV [OLD]**

**Answer Any Two Questions.** (सभी प्रश्न 10–10 अंकों के हैं)

1. How are frame buffers used to control color and intensity of any image ? You are required to support your answer with suitable diagrams and bit plane tables.
2. Briefly discuss the term "Windowing Transformation". Support your discussion with a suitable diagram and related mathematical equations.
3. Compare and contrast between the following :—
  - (i) Simulating positive acceleration and Simulating negative acceleration in Animation.
  - (ii) Hypertext and Hypermedia.
  - (iii) Computer assisted animation and Computer generated animation.

**PAPER-XXVI [OLD]**

**(PRACTICAL WORK)**

**PAPER-XXVII [OLD]**

**Answer Any Two Questions.** (सभी प्रश्न 10–10 अंकों के हैं)

1. What is Fuzzy logic ? Discuss different types of operations on fuzzy logic with the help of an example.
2. What is resolution principle in AI ? Explain. Let P(x) and Q(x) represent "x is a rational number" and "x is a real number", respectively. Symbolize the following sentences :—
  - (i) Every rational number is a real number.
  - (ii) Some real numbers are rational numbers.
  - (iii) Not every real number is a rational number.
3. What is Prolog ? Define the properties of PROLOG. Explain backtracking and Unification inferencing system in PROLOG with the help of an example.

**PAPER-XXVIII [OLD]**

**Answer Any Two Questions.** (सभी प्रश्न 10–10 अंकों के हैं)

1. Solve the following system using the Lu decomposition method
$$6x_1 - 2x_2 = 14$$
$$9x_1 - x_2 + x_3 = 21$$
$$3x_1 - 7x_2 + 5x_3 = 9$$
2. Solve the following systems using the Gauss elimination method
$$3x_1 + 2x_2 + 3x_3 = 5$$
$$x_1 + 4x_2 + 2x_3 = 4$$
$$2x_1 + 4x_2 + 8x_3 = 8$$
3. (a) Evaluate the Integral  $\int_0^6 (x^2 + x + 2) dx$  using Trapezoidal rule with  $h = 1.0$ .  
(b) Evaluate the Integral  $\int_0^1 \frac{dx}{1+x}$  using Simpson's  $\frac{3}{8}$ th rule with  $h = \frac{1}{3}$ .

**PAPER-XXIX [OLD]**

**Answer Any Two Questions.** (सभी प्रश्न 10-10 अंकों के हैं)

1. What are assemblies ? Explain its versions. Differentiate between private and shared assemblies.
2. List the types of file extensions that are handled by ASP.NET. Explain the ASP.NET folder structure.
3. Explain various classes of ADO.NET. What is transaction ? Explain.

**PAPER-XXX [OLD]**

**(PRACTICAL WORK)**