



PJ – 582

III Semester M.C.A. Examination, January 2019
(CBCS)

COMPUTER SCIENCE

MCA 307 : Soft Core – Quantitative Teaching and Research Aptitude

Time : 3 Hours

Max. Marks : 70

Instruction : Answer **any five** questions from Section – A and any **four** questions from Section – B.

SECTION – A

Answer **any five** questions. Each carries six marks. (5×6=30)

1. The sum of a rational number and its reciprocal is $\frac{13}{6}$. Find the number.
2. Rohit was 4 times as old as his son 8 years ago. After 8 years, Rohit will be twice as old as his son. What are their present ages ?
3. If 20 men can build a wall 56 metres long in 6 days, what length of a similar can be built by 35 men in 3 days ?
4. A can do a piece of work in 7 days of 9 hours each and B can do it in 6 days of 7 hours each. How long will they take to do it, working together $8\frac{2}{5}$ hours a day ?
5. What was the day of the week on 4th June, 2002 ?
6. Define teaching. Explain the nature of teaching aptitude.
7. Define thesis writing, its characteristics and format.
8. Write short notes on :
 - a) Professional/Technical education
 - b) Value education.

P.T.O.



SECTION - B

Answer any four questions. Each carries 10 marks.

(4×10=40)

9. a) The average of four consecutive even number is 27. Find the largest of these numbers.
- b) Divide Rs. 1162 among A, B, C in the ratio 35:28:20.
10. a) A, B and C start a business each investing Rs. 20,000. After 5 months A withdrew Rs. 5,000, B withdrew Rs. 4,000 and C invests Rs. 6,000 more. At the end of the year, a total profit of Rs. 69,900 was recorded. Find the share of each.
- b) Two pipes can fill a tank in 10 hours and 12 hours respectively while a third pipe empties the full tank in 20 hours. If all the three pipes operate simultaneously, in how much time will the tank be filled?
11. a) A train 100 m long is running at the speed of 30 km/hr. Find the time taken by it to pass a man standing near the railway line.
- b) A man takes 3 hours 45 minutes to row a boat 15 km downstream of a river and 2 hours 30 minutes to cover a distance of 5 km upstream. Find the speed of the river current in km/hr.
12. a) In a simultaneous throw of a pair of dice, find the probability of getting a total more than 7.
- b) Find the value of
- $$\frac{1}{\log_3 60} + \frac{1}{\log_4 60} + \frac{1}{\log_5 60}$$
13. Define research. Discuss the various types of research and their features.
14. a) Distinguish between formal education and distance education in India. 6
- b) What are the barriers of communication? 4



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III Semester M.C.A. Examination, January/February 2018
(CBCS Scheme)

COMPUTER SCIENCE

MCA 307 : Soft Core – Quantitative, Teaching and Research Aptitude

Time : 3 Hours

Max. Marks : 70

Instruction : Answer **any five** questions from Section – A and **any four** from Section – B.

SECTION – A

Answer **any five** questions. Each carries six marks. (5×6=30)

1. A train starts with full of passengers. At first station, it drops $\frac{1}{3}$ of passengers and takes 280 more. At second station, drops $\frac{1}{2}$ of the passengers of the new total. At third station it is found to have 240 passengers. Find the total number of passengers at the beginning.
2. One year ago the ratio of ages of Gaurav and Sachin was 6:7 respectively. Four years hence, the ratio would become 7:8. Find their ages.
3. How many words can be formed by using all the letters of the word DAUGHTER so that all the vowels always come together ?
4. What are the steps involved in carrying out a research ?
5. Write the divisibility rules by 3, 7 and 11 and test the same with the number 10326405 using the divisibility rules stated. Also give the difference and product of the place value and face value of 6 in the number 10326405.
6. If $a^2 + b^2 = 117$ and $ab = 54$ then find the value of $[(a + b)/(a - b)]$ and find out $(a + b)^3$ and $(a - b)^3$.
7. Explain different types of communication.
8. Two cards are drawn at random from a pack of 52 cards. What is the probability that either both are black or both are queens ?

[There equal number of Black and Red cards; The cards are 2, 3, 4, 5, 6, 7, 8, 9, 10; J, Q, K, A and there are 4 cards of each of these].

P.T.O.



SECTION - B

Answer **any four** questions. **Each** carries **ten** marks.**(4×10=40)**

9. What are the requirements of good teaching ? What are the qualities of a good teacher and good student ?
10. Write a short note on :
- i) Seminar 3
 - ii) Workshop 3
 - iii) UGC 4
11. a) Ticket numbers 1 to 25 are mixed up and one ticket is drawn at random. What is the probability that the ticket number is either a multiple of 3 or 5 ?
- b) A bag contains 4 blue, 5 green and 6 red balls and three balls are drawn at random. What is the probability that all of them are red balls ?
12. a) The sale of a product including the sales tax is Rs. 616. The rate of sales tax is 10% and the shopkeeper made a profit of 12%. Find the cost price of the product.
- b) Using long division method, find the square root of 14641.
13. a) Find the day of the date 10th July 1778.
- b) The HCF of two numbers is 11 and their LCM is 693. If one of the numbers is 77, find the other number.
14. a) A, B and C can do a piece of work in 36, 54 and 72 days respectively. They started the work, but, A left 8 days before completion and B left 12 days before completion. What is the total number of days for which C worked ?
- b) A thief is noticed by a police man from a distance of 200 m. The thief starts running and the police man chases him. The thief and the police man run at speed 10 KM and 11 KM respectively. What is the distance between them after 6 minutes ?



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III Semester M.C.A. Examination, January 2016
(CBCS)
COMPUTER SCIENCE
MCA – 307 : Quantitative, Teaching and Research Aptitude

Time : 3 Hours

Max. Marks : 70

SECTION – A

Answer any five questions. Each carries six marks. $\frac{15}{18}$ $\frac{23}{23}$ $\frac{796}{59}$ (5x6=30)

1. A train starts full of passengers. At the first station, it drops one-third of the passengers and takes 280 more. At the second station, it drops one-half of the new total and takes 12 more. On arriving at the third station, it is found to have 248 passengers. Find the number of passengers in the beginning.
2. Abhay's age after six years will be three-seventh of his father's age. Ten years ago, the ratio of their ages was 1 : 5. What is Abhay's father's age at present ?
3. How many words can be formed from the letters of the word "EXTRA", so that the vowels are never together ?
4. A dealer sold three-fourth of his articles at a gain of 20% and the remaining at cost price. Find the gain earned by him in the whole transaction.
5. A and B undertake to do a piece of work for Rs. 600. A alone can do it in 6 days while B alone can do it in 8 days. With the help of C, they finish it in 3 days. Find the share of each.
6. Discuss the various types of research and their features. $\frac{7}{7}$
7. Explain the different types of communication. $\frac{4}{4}$
8. Differentiate between formal education and distance education in India. $\frac{4}{4}$

P.T.O.



SECTION – B

Answer **any four** questions. **Each** carries **ten** marks.

(4×10=40)

9. a) Two dice are thrown together. What is the probability that the sum of the numbers on the two faces is divisible by 4 or 6 ? 5
- b) Simplify $\left(\log \frac{75}{16} - 2 \log \frac{5}{9} + \log \frac{32}{243} \right)$ 5
10. a) A train is 150 m long is running with a speed of 68 kmph. In what time will it pass a man who is running at 8 kmph in the same direction in which the train is going ? 5
- b) A man takes 3 hours 45 minutes to row a boat 15 km down stream of a river and 2 hours 30 minutes to cover a distance of 5 km upstream. Find the speed of the river in current in km/hr. 5
11. a) Ajay borrowed some money at the rate of 6% p.a. for the first two years, at the rate of 9% p.a. for the next three years and at the rate of 14% p.a. for the period beyond five years. If he pays a total interest of Rs. 11,400 at the end of nine years, how much money did he borrow ? 5
- b) Two pipes A and B can fill a tank in 36 hours and 45 hours respectively. If both the pipes are opened simultaneously, how much time will be taken to fill the tank ? 5
12. a) What was the day of the week on 16th July, 1776 ? 5 ✓
- b) Of the three numbers, second is twice the first and is also thrice the third. If the average of the three numbers is 44, find the largest number. 5
13. Define teaching. Explain briefly the nature of teaching aptitude. 5
14. a) Explain governance policy and administration of higher education system in India. 6 ✓
- b) Define the following terms : 4 ✓
- i) article
- ii) workshop.