

UNIVERSITY OF ASIA PACIFIC

Admission Test: Fall 2013

Total marks: 100

Time: 1 hour

Name :

Serial No:

(Answer all the questions. Assume reasonable value for missing data, if necessary)

Section A: Mathematics

1. Solve the quadratic equation $x^2 - 4x - 8 = 0$ (2.5)

2. How many different ways can the letters of the word 'LEADING' be arranged in such a way that the vowels always come together. (2.5)

3. Calculate x, if $\log_3(1/9) + \log_x(81) = 0$ (2.5)

4. Solve the two equations:

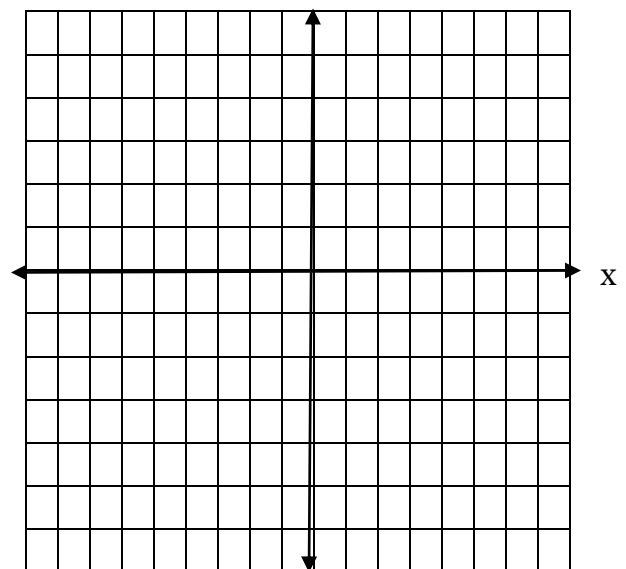
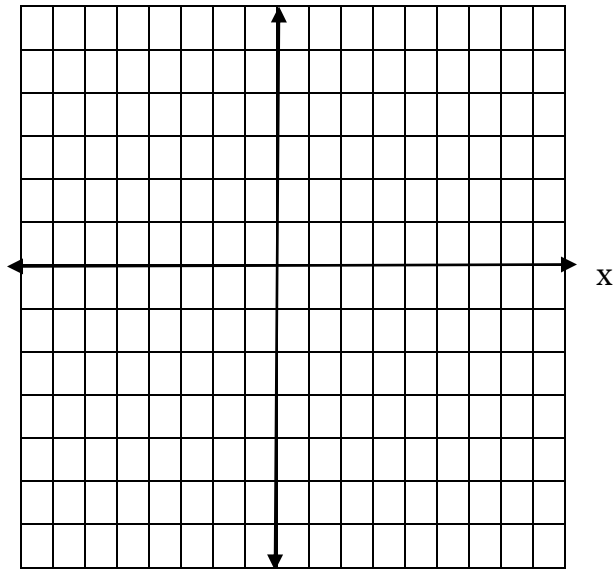
(2.5)

$$2a - 5b = 11$$

$$3a + 2b = 7$$

5. Plot (freehand) graphs for $x = y/2 + 1$ and $y = x^2/2$ in the gridlines provided below.

(3)



6. If the equation $2x + 3y = 7$ and $3ax - 5by + 15 = 0$ represent the same straight line, what are the values of constants a and b ?

(3)

7. The ends of a diameter of a circle are (5,6) and (7,8). Find the coordinates of the center and length of the radius. Hence, find the equation of the circle. (3)

8. The vertices of a triangle ABC are A (-3, 2), B (-3, 9) and C (5, -8). Determine the areas of the triangle. (3)

9. If the volume of a cylinder is 169.65 m^3 and the height of the cylinder is two times its diameter, then determine the height of the cylinder. (3)

10. Find out the value :

(5)

$$\lim_{n \rightarrow 2} \frac{5x - 10}{x^2 - x - 2}$$

11. Evaluate $\frac{d}{dx} [\cos^{-1}\{(1+x)/2\}^{1/2}]$

(5)

12. Evaluate $\int \{1/(1+x^2)^{3/2}\} dx$

(5)

Section B: Physics

13. Convert 100 lb/in^2 (pound per square inch) to Pa (Pascal) (5)

14. A train is travelling with a velocity of 12 ms^{-1} . Determine the value of the required retardation if the train has to be stopped in 30 seconds. (5)

15. i. State Hooke's Law
ii. Define Poisson's ratio (5)

16. A bullet loses half of its initial velocity after penetrating 0.06m inside a wall. How far will the bullet be able to penetrate inside the wall. (5)

17. Maximum and minimum resultant of two forces acting on a same point is 8 N and 2 N respectively. Determine the resultant of those two forces if the internal angle between them is 60° . (5)

18. One boat goes 12km distance with 4kmh^{-1} then it goes 18 km with 3kmh^{-1} . What is the average velocity of that boat? (5)

Section C: English

19. Write an essay on 'Noise Pollution' (Within 100 words)

(10)

20. Read the following passage carefully and tick mark corresponding circle to choose the correct or the best one from the four answers following each question: (5)

Trees are useful to man in three very important ways. They provide him with food and other products; they give him shade and help to prevent drought and floods. Unfortunately in many parts of the world man had not realized that the third of these services is the most important. In his eagerness to draw quick profit from the trees, he has cut them down in large numbers only to find that with them he has lost the best friends he had. Two thousand years ago a rich and powerful country cut down its trees to build warships with which to gain itself an empire. It gained the empire but without its trees its soul became hard and poor. When the empire fell into pieces the country found itself faced by floods and starvation.

a) Drought means

- Low rainfall
- Less rainfall
- Excessive sunshine
- Lack of rainfall

b) One of the important reasons of cutting down the trees by man is

- Illiteracy
- Tendency to draw quick profit
- Necessity
- Whims

c) Trees help the soil

- To soften
- To loosen
- To harden
- To tighten

d) After cutting down trees the rich country faced

- Famine
- Natural calamities
- Flood
- Famine and floods

e) The country gained

- Wealth
- Warships
- The empire
- Trees

21. Translate the following passage into English

(5)

সোমবার ফোর্বস এ পপ্রকাশিত বিশ্বের সবচেয়ে দামী ৫০টি ক্লাবের তালিকায় বিশ্বের সবচেয়ে দামী ক্লাবের মর্যাদা পেয়েছে রিয়াল মাদ্রিদ। নয় বারের ইউরোপীয় চ্যাম্পিয়ন রিয়াল মাদ্রিদের দাম এখন ৩৩০ কোটি ডলার। গত বছরের সবচেয়ে দামী ক্লাব ম্যানচেস্টার ইউনাইটেড এবার আছে তালিকার দ্বিতীয় স্থানে (৩১৭ কোটি ডলার)। ২৬০ কোটি ডলার সম্পদ নিয়ে স্প্যানিশ লা লিগা চ্যাম্পিয়ন বার্সেলোনা আছে তৃতীয় স্থানে।

Section D: Aptitude

22. Look at this series: 201, 202, 204, 207,.....what number should come next?

(2)

23. If one-third of one-fourth of a number is 10, then four-tenth of that number is what number?

(2)

24. In the middle of a round water pool there is a beautiful water-lily. The water-lily doubles in size every day. After exactly 20 days, the complete pool will be covered by the lily. After how many days will half of the pool be covered by the water-lily? (2)

25. What is the angle between the minute hand and the hour hand of a clock when the time is 5:20? (2)

26. Look carefully at the sequence of symbols to find the pattern: (2)

