機能機械学専攻外国語科目問題冊子

［注意書き］

１．問題冊子は始めの合図があるまで開かないで下さい。

２．問題冊子には，２枚の出題解答用紙が綴じられています。解答始めの合図があった後に，確認をし，不足の場合は申し出て下さい。

３．解答は，出題解答用紙中に記入して下さい。

４．受験者の途中退場は認められません。

５．試験終了時に，問題冊子を回収します。

平成１７年度博士前期課程入学試験出題解答用紙

機 能 機 械 学　　専 攻		受験番号	
試験科目	英　　語	２　枚中の　１	得　点

１．次の英文を全訳しなさい.

If two objects in close proximity and in vacuum are released at the same level above ground, they will accelerate at exactly the same rate. Under these conditions, the force of gravity acting on them depends exclusively upon their mass. This fact can be used to compare the masses of two objects with a beam balance. A beam balance is in equilibrium when equal forces act on each side of the knife support, a property which makes this balance an excellent instrument to compare masses. Thus, if a standard l kilogram mass is precisely balanced in vacuum against any other object, we know that the forces are equal and because the trays are at the same level, the masses must be the same.

（Theodore Wildi 著, Metric Units and Conversion Chart, IEEE Press より引用）

２．次の文章は論文用の図(Fig.1)について，図の描き方の欠点を指摘し，改善点を示している．以下の問いに答えなさい.

More common faults of draughtsmanship. 1) no key to Symbols; ２) the two graphs distinguished by symbol as well as type of line; ３) vertical lettering difficult to read; ４) use of bold lettering detracts from the appearance of the graph; ５) numbered years too far below x axis.

Correct presentation of data in the figure. 1) a key included; ２) graphs distinguished by symbol only; ３) correct positioning and arrangement of lettering.

（Maeve O’connor, F.Peter Woodford 著, Writing Scientific Papers in English, Pitman Medical より一部変更して引用）

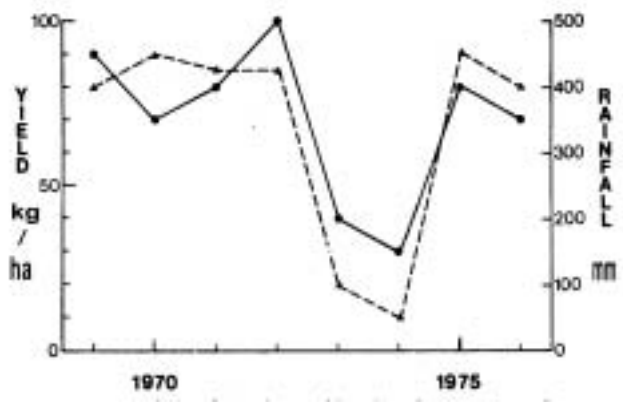
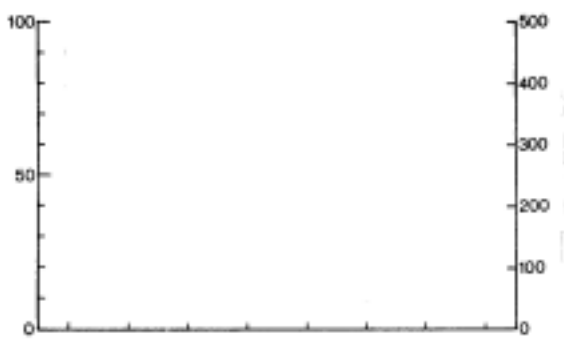


Fig.1

１）Fig.1 の図の描き方の欠点はなにか，該当英文部分を日本語に訳しなさい.

２）改善点を日本語に訳し，それにしたがって右の図に修正したグラフを示しなさい．ただし，データ点のプロット位置は正確でなくてよい．また，Fig.1 で Yield は実線で，Rainfall は鎖線で示されている.



平成１７年度博士前期課程入学試験出題解答用紙

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３．次の文章を読み，以下の問いに答えなさい.

Thus far forces have been identified by the symbols $\boldsymbol{P}_1$, $\boldsymbol{P}_2$, etc [Fig.2(a)]. A system of identifying forces, known as Bow's notation, affords many advantages. In this system of lettering letters are placed in the space diagram on each side of a force and a force is identified by two letters. The sequence in which the letters are read is important.　Figure 2(b) shows the space diagram of five concurrent forces. Reading about the point in common in a clockwise manner the forces are *AB*, *BC*, *CD*, *DE*, and *EA* . When a force in the force polygon is represented by a line, a letter is placed at each end of the line. As an example, the vertical upward force in Fig.2(b) is read *AB* (note that this is read clockwise about the common point) ; in the force polygon [Fig.2(c)] the letter *a* is placed at the bottom of the line representing the force *AB* and the letter *b* is at the top. We shall use capital letters to identify the forces in the space diagrams and lower-case letters in the force polygon. From point *b* in the force polygon we draw force *bc*, then *cd*, and continue with *de* and *ea*. Since the force polygon closes, the five concurrent forces are in equilibrium.

（Harry Parker, M.S.著, Simplified Mechanics and Strength of Materials, John Wiley & Sons, inc, より引用）

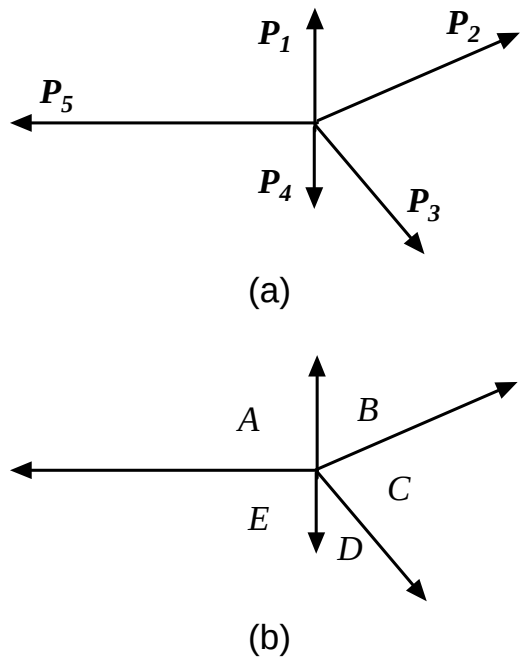

Fig.2

１）Bow's notation について Fig. 2 の図を用いて具体的に説明しなさい.

２）Bow's notation の advantage の一例を，Fig.2 の図を用いて具体的に説明しなさい.